Gas Journal

VOL. 280 109th YEAR. LONDON, MAY 8, 1957. Nº 4895 PRICE 1/6

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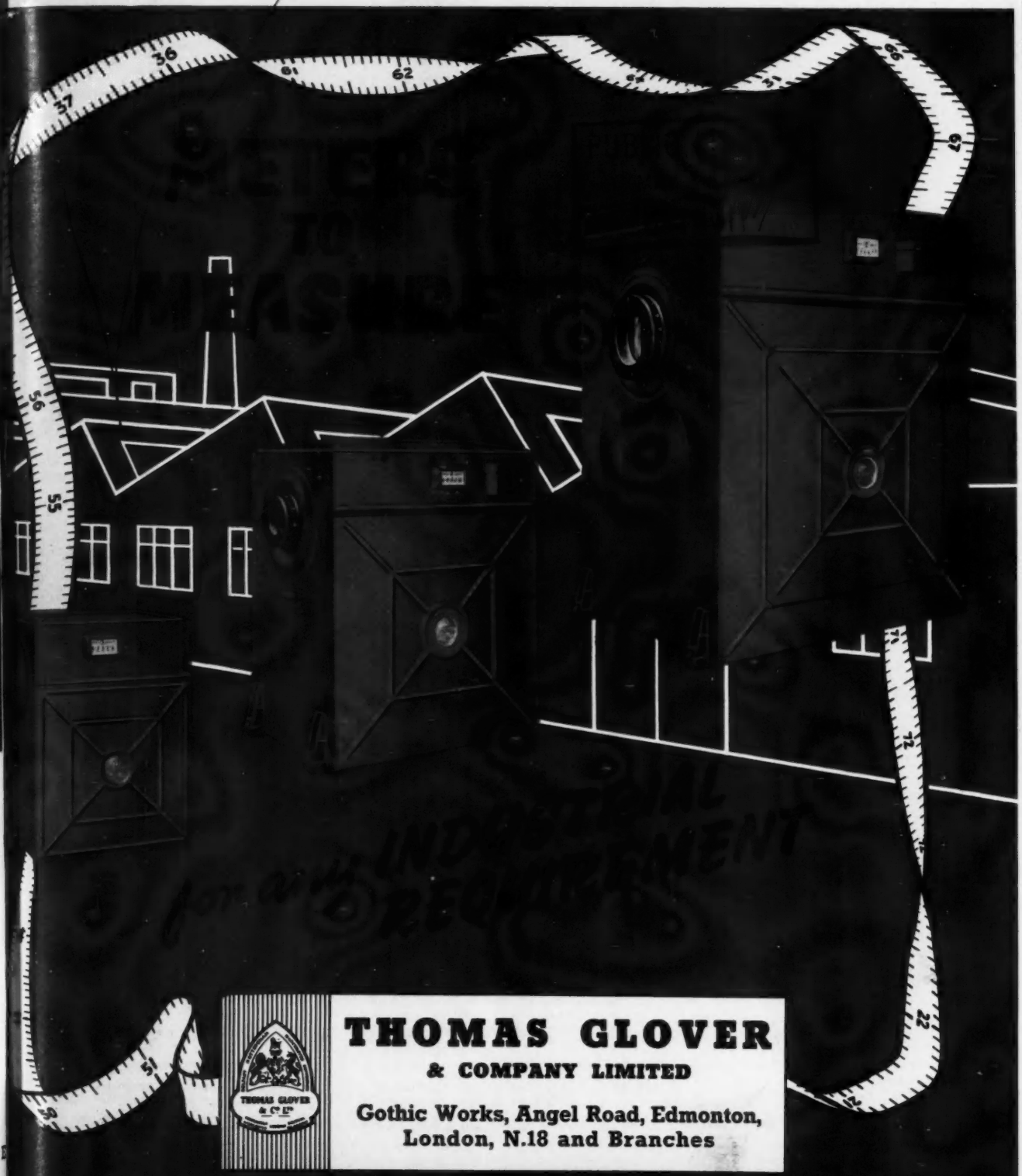

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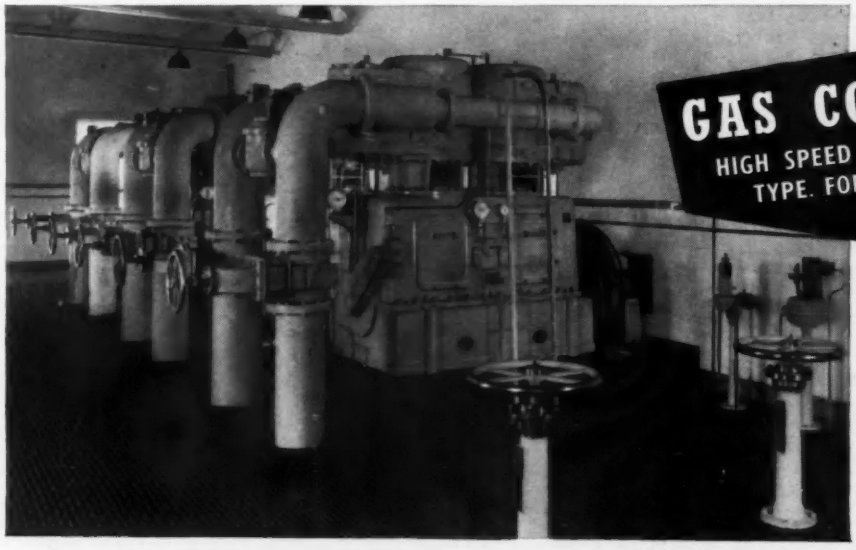

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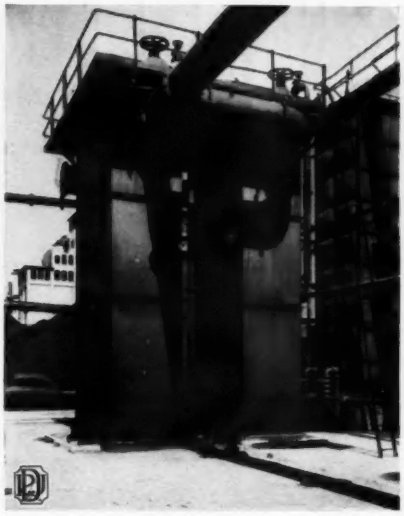

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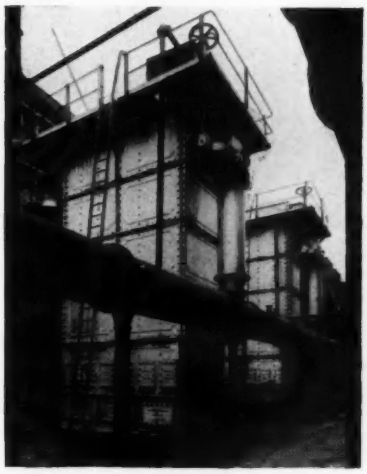

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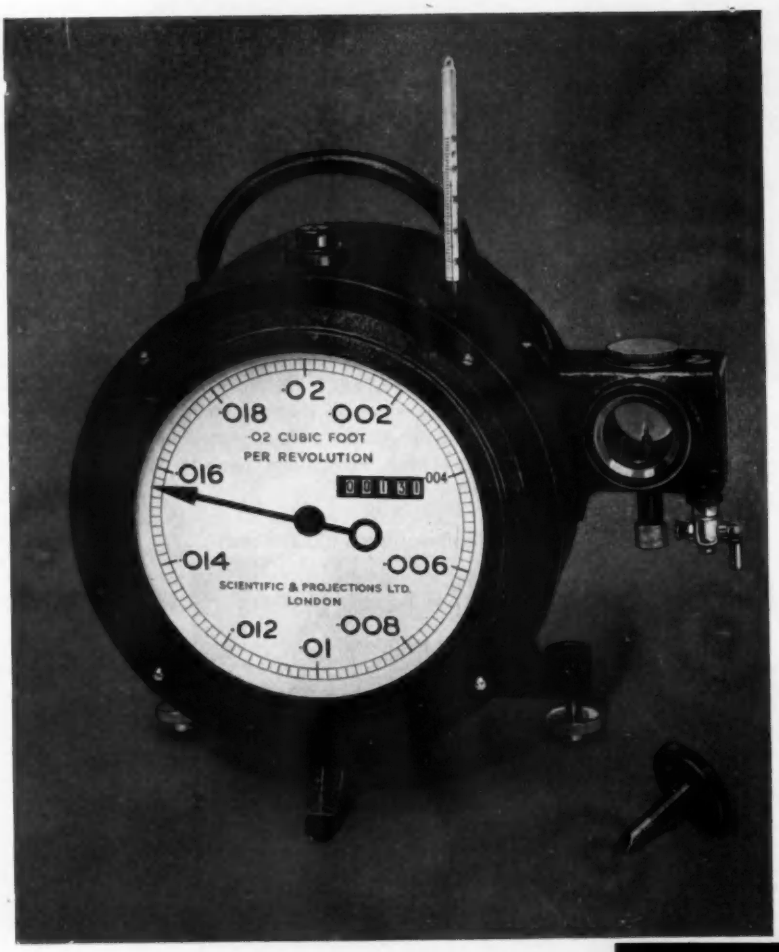

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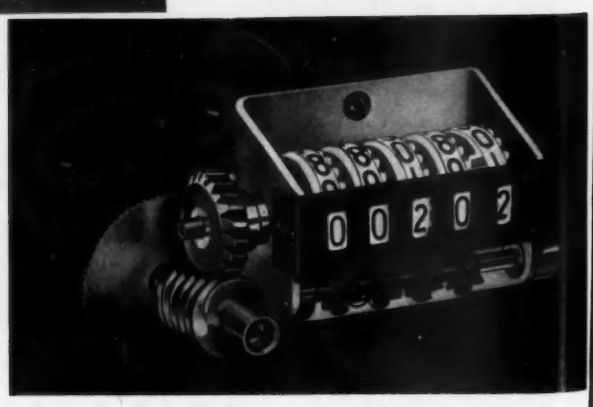

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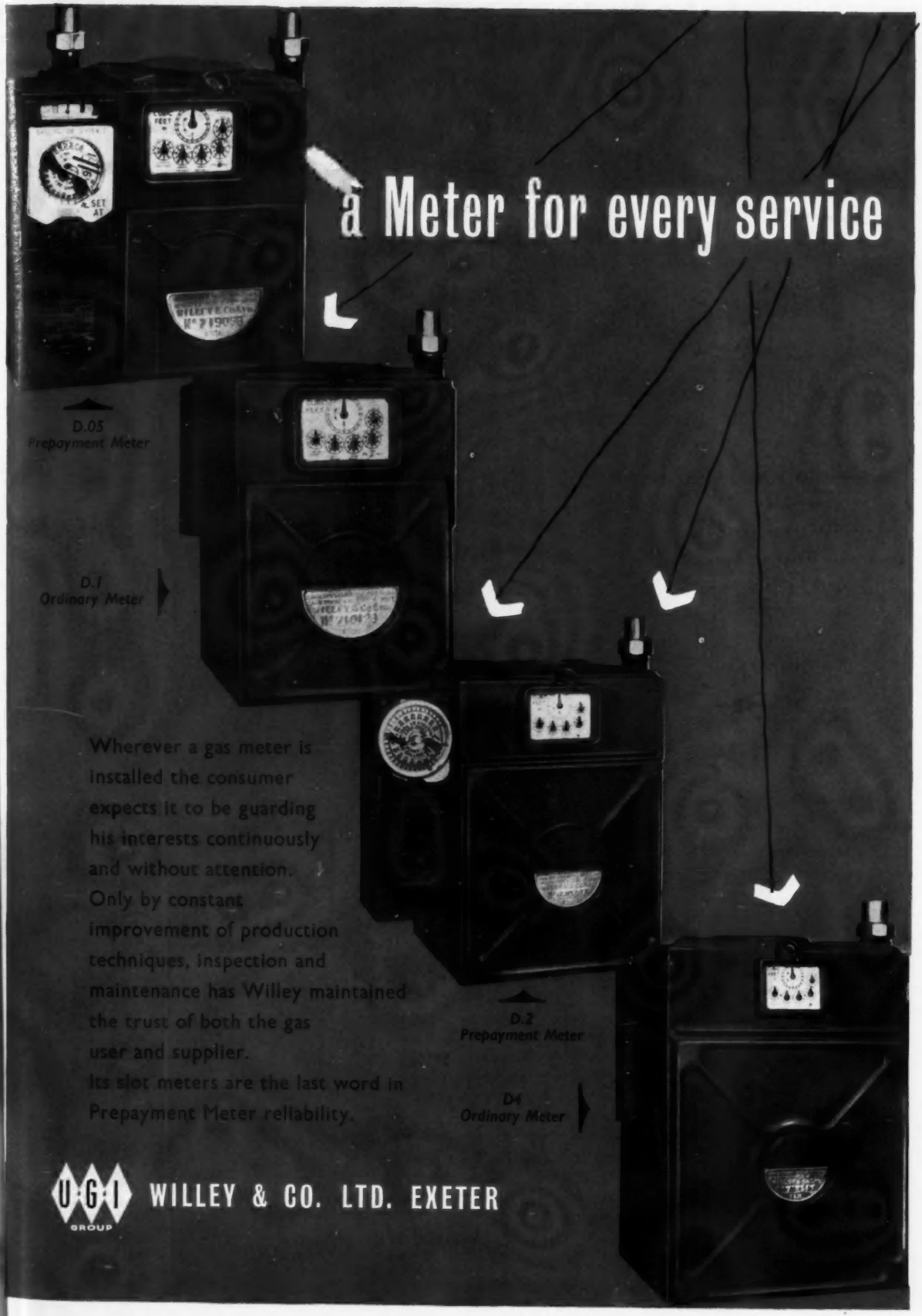
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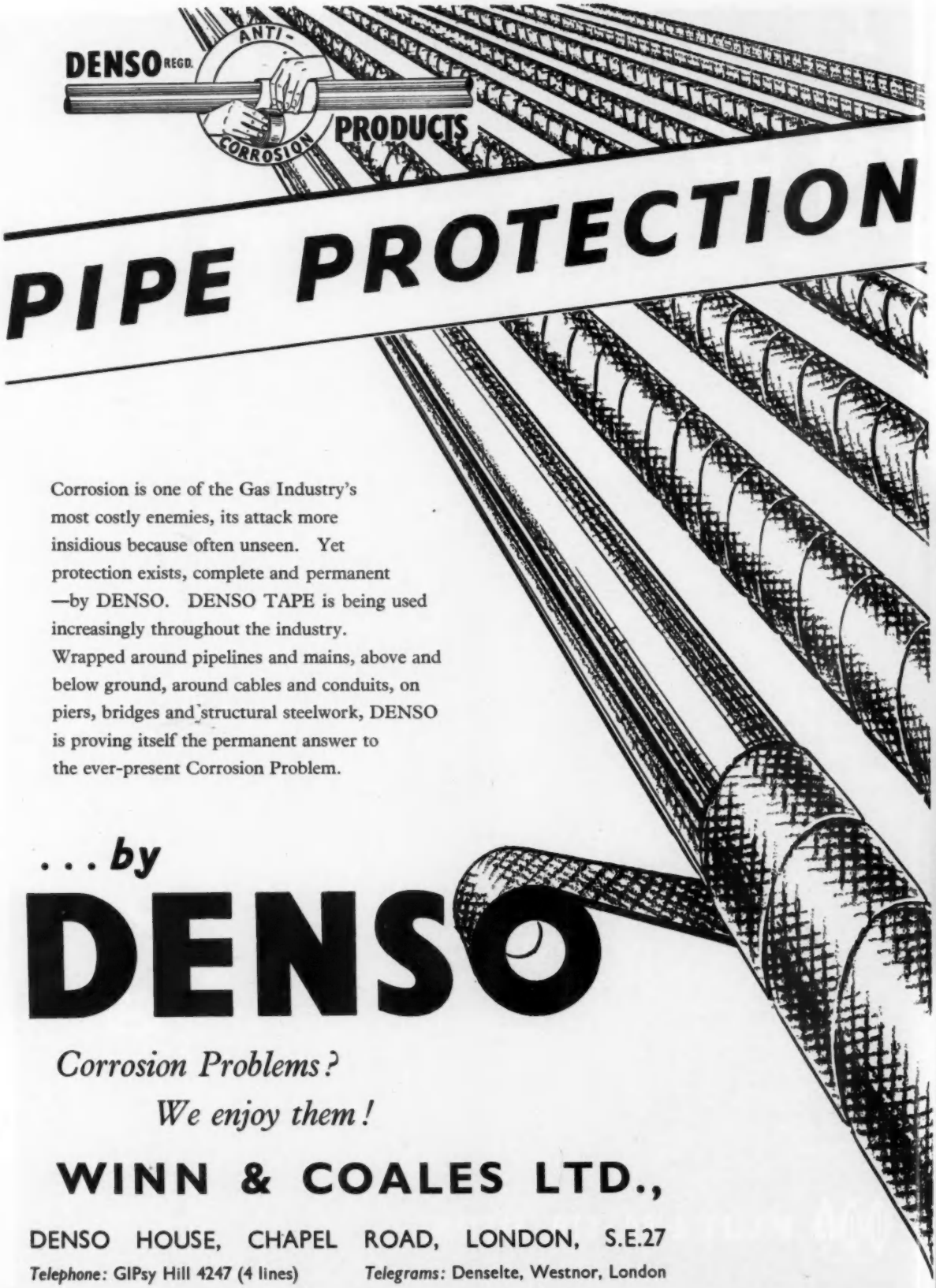

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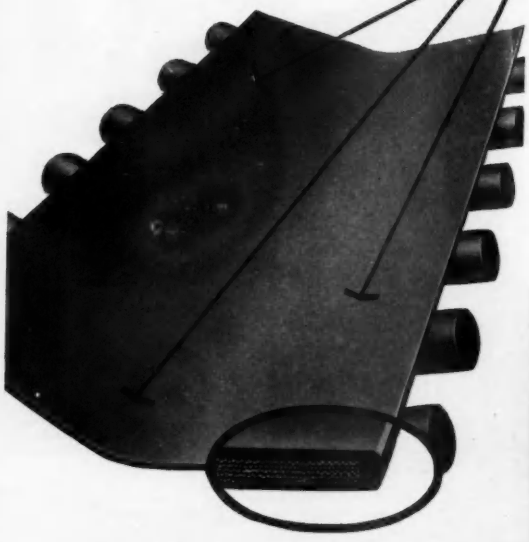

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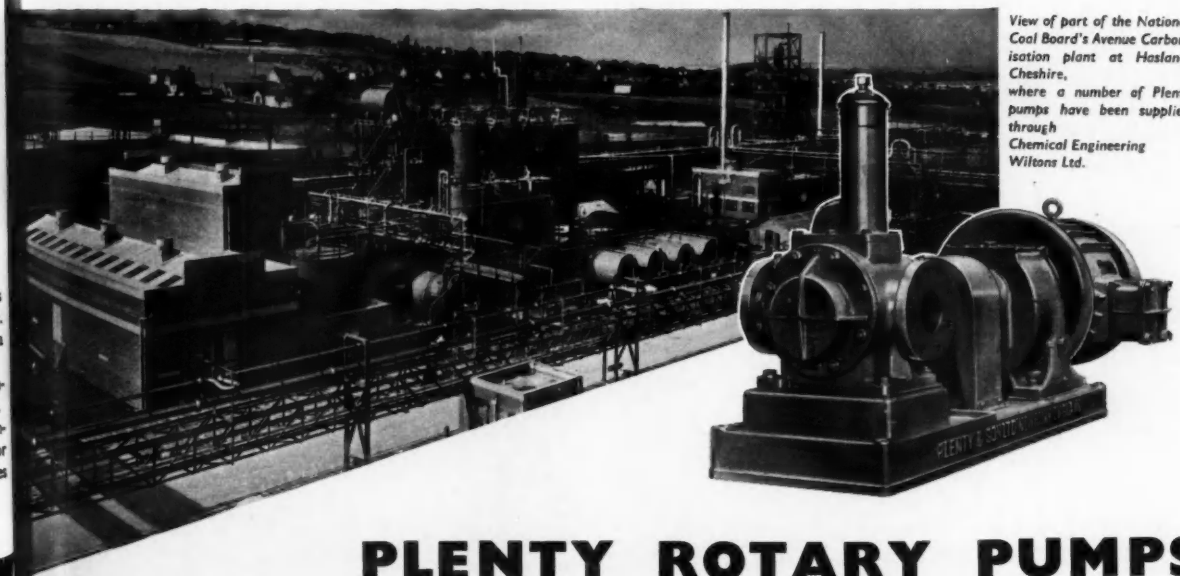

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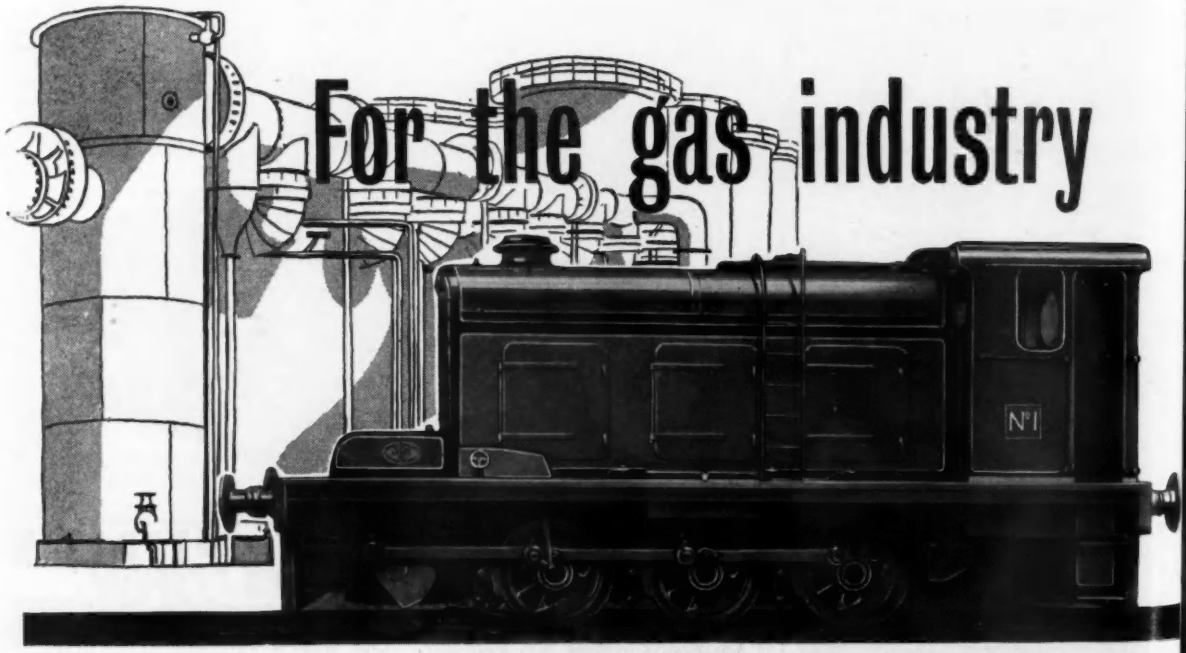

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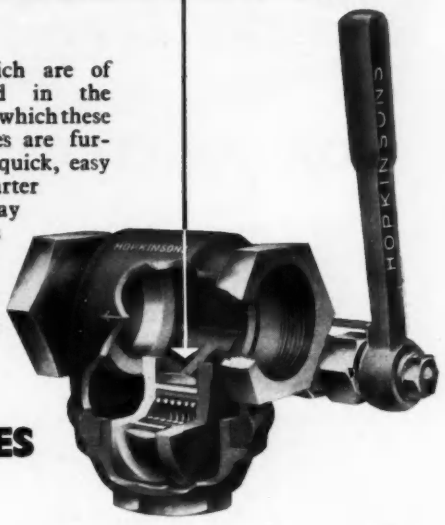

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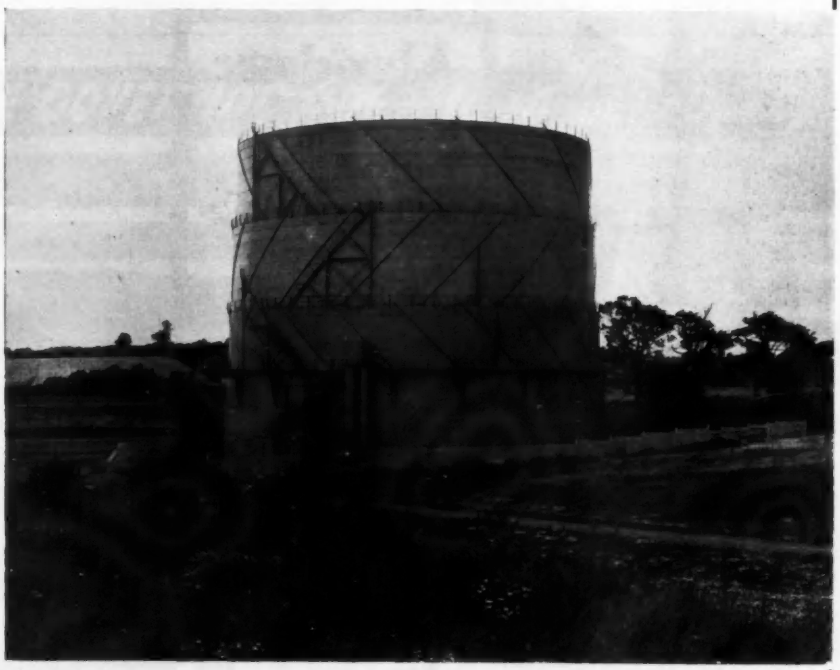

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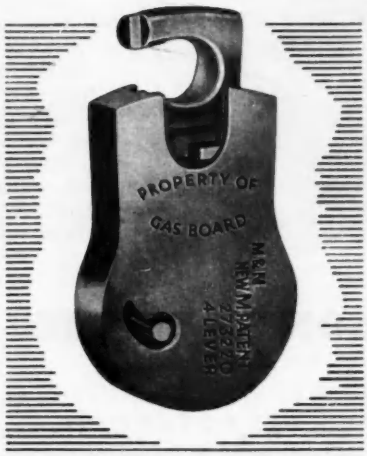

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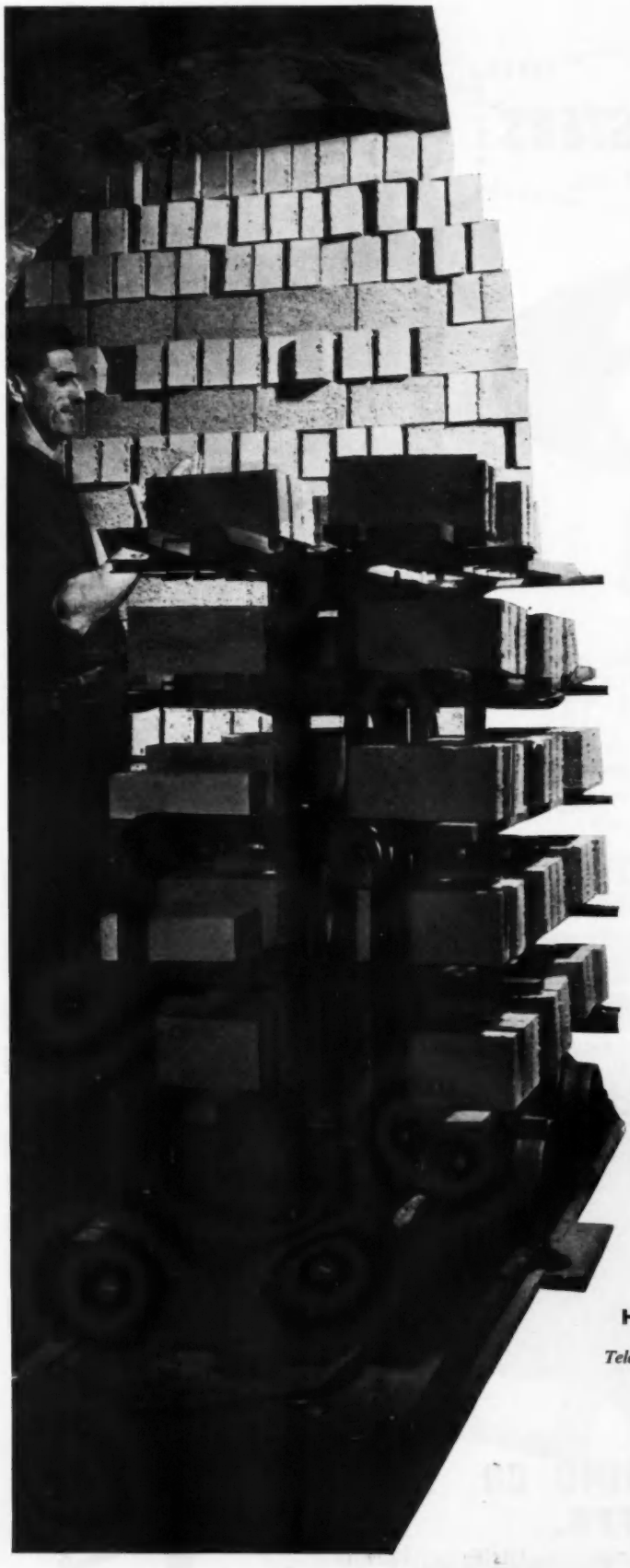

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INDEX TO 'JOURNAL' ADVERTISERS

PAGE

A

A C.E. Machinery Ltd. ... ...
A P.V. Company Ltd. ... ...
Abbott, Birks & Co. Ltd. ... ...
Acme Wringers Ltd. ... ...
Arrogen Co. Ltd. ... ...
Alder & Mackay Ltd. ... ...
Allan Taylor (Engineers) Ltd. ... ...
Aquafont Industries Ltd. ... ...
Arcot Gas Water Heaters Ltd. ... ...
Ashmore, Benson, Pease & Co. ... ...
Ashworth & Parker Ltd. ... ...
Aspinall's (Paints) Ltd. ... ...
Associated Lead Manufacturers Ltd. ... ...
Atlas Preservative Co. Ltd. ... ...
Audley Engineering Co. Ltd. ... ...
Automotive Products Ltd. ... ...
Averill, C. R., Ltd. 266

B

Bale & Church Ltd. 294
Balfour, Henry, & Co. Ltd. ... ...
Bells Asbestos & Engineering Co., Ltd. ...
Berry's Foundry (1949) Ltd. 294
Birtley Engineering Ltd. ... ...
Blakeley, Firth, Sons & Co. Ltd. ... ...
Bolton's Superheater & Pipe Works Ltd. ...
Bratt Colbran Ltd. ... ...
Bray, George, & Co. Ltd. ... ...
Bristol Pneumatic Tools Ltd. ... ...
British Carbo-Norit Union Ltd. ... ...
British Gas Purifying Materials Co. ... ...
British Jeffrey-Diamond Ltd. ... ...
British Paints Ltd. 270
British Rototherm Co. Ltd. 296
British Thomson Houston Ltd. ... ...
British Tyre & Rubber Co. Ltd. ... ...
British Vacuum Cleaner & Engineering Co. Ltd. ...
Broadbent, Thomas, & Sons Ltd. ... ...
Broom & Wade Ltd. ... ...
Brown, J., & Co. Ltd. 293
Bugden, Thos., & Co. ... ...

C

Cambridge Instrument Co. Ltd. ... ...
Cannon (G.A.) Ltd. ... ...
Causeway Reinforcement Ltd. ... ...
Cementation Co. Ltd. ... ... Cover II
Chemical Engineering Wiltons Ltd. ... ...
Cinema-Television Ltd. ... ...
Clapham Bros. Ltd. ... ...
Clayton, Son & Co. Ltd. 265
Cleckheaton Engineering Co. Ltd. 294
Clensol Ltd. ... ...
Clifford Engineering Co. Ltd. ... ...
Cochrane (Middlesbro') Foundry Ltd. ... ...
Cohen, George, Sons & Co. Ltd. ... ...
Concrete Proofing Co. Ltd. ... ...
Consett Iron Co. Ltd. ... ...
Cort, Robert, & Son Ltd. ... ...
County Chemical Co., Ltd. ... ...
Crane Ltd. ... ...
Crone & Taylor Ltd. ... ...
Crosby & Co. Ltd. ... ...
Crossley Bros. ... ...
Crosthwaite Furnaces & Scriven Mach. Tools Ltd. ...
Cutler, Samuel, & Sons Ltd. ... .
Cuxson, Gerrard & Co. Ltd. ... ...

D

Davenport Engineering Co. Ltd. ... ...
Davey, Paxman & Co. Ltd. ... ...
Dean, W. H., & Son Ltd. ... ...
De la Rue, Thomas, & Co. Ltd. (Gas Group) ...
Demolition & Construction Co. Ltd. ... ...
Dempster, R. & J., Ltd. 257
Dempster, Robert, & Sons Ltd. ... Facing P.289
Denison & Son Ltd. ... ...
Derbyshire Silica Firebrick Co. Ltd. ... ...
Diaphragm & General Leather Co. Ltd. ... 264
Donkin (The Bryan) Co. Ltd. ... ... Cover II
Douglas, Wm., & Sons Ltd. ... ...
Drakes Ltd. ... ...
Dresser Manufactures (England) Ltd. ... ...
Drew, H. B., Ltd. ... ...
Drummond Patents Ltd. ... ...

E

Eagre Construction Co. Ltd. ... ...
Edgar, Wm., & Son Ltd. ... ...
Electrocontrol Ltd. ... ...
Electrofio Meters Co. Ltd. ... ...
Electrolux Ltd. ... ...
Elliott Bros. (London) Ltd. ... ...
Ether Ltd. ... ...
Evered & Co. Ltd. ... ...
Ewart & Sons Ltd. ... ...
Ewart Chainbelt Co. Ltd. ... ...

F

Fisher & Ludlow Ltd. ... ...
Flavel, S., & Co. Ltd. ... ...
Fluidrive Engineering Co. Ltd. ... ...
Fowler, John, & Co. (Leeds) Ltd. ... ...

G

Gas Purification Ltd. 294
General Electric Co. Ltd. ... ...
Gibbons Bros. Ltd. ... ...
Girdex Engineering Co. Ltd. ... ...
Glover, George, & Co. Ltd. ... ...
Glover, Thomas, & Co. Ltd. ... ... Cover I, 272
Godfrey, Sir George, & Partners (Industrial) ...
Goodall Clayton & Co. Ltd. 293
Goodyear Industrial Rubber Products Ltd. ...
Graphite Products Ltd. ... ...
Greenwood & Batley ... ...
Green & Boulding Ltd. 294
Gunite Construction Co. Ltd. 296

H

Hamilton, A. H., & Co. Ltd. ... ...
Hardman & Holden Ltd. ... ...
Harris & Pearson Ltd. ... ...
Harris Engineering Co. Ltd. ... ...
Harrisons (London) Ltd. ... ...
Harvey, G. A., & Co. (London) Ltd. 263
Hick Hargreaves & Co. Ltd. ... ...
Hills (West Bromwich) Ltd. ... ...
Hilmor Ltd. ... ...
Holman, Michell & Co. Ltd. ... ...
Holmes, W. C., & Co. Ltd. 295
Hopkinsons Ltd. 265
Horseley Bridge & Thomas Piggott Ltd. ...
Horstmann Gear Co. Ltd. ... ... Cover II
Hudswell, Clark & Co. Ltd. 264
Hughes, F. A., & Co. Ltd. ... ...
Humphreys & Glasgow Ltd. ... ...
Hyde, Silas, Ltd. ... ...

I

I.C.I. Ltd. (Metals Division) ... ...
Ideal Boilers & Radiators Ltd. ... ...
Inertol Ltd. ... ...
Ingham, John, & Sons Ltd. ... ...

J

Jeavons, E. E., & Co. Ltd. ... ...
Jeavons Engineering Co. 267
Jenkins, W. J., & Co. Ltd. ... ...
Johnson, C. H., (Machinery) Ltd. ... ...
Joy-Sullivan Ltd. ... ...

K

Keay, E. C. & J., Ltd. ... ...
Keelavite Rotary Pumps & Motors Ltd. ...
Keith Blackman Ltd. ... ...
Kings Patent Agency Ltd. ... ...
King, Walter, Ltd. 292, 293
Kirkham, Hulett & Chandler Ltd. ... ...

L

Lafarge Aluminous Cement Co. Ltd. ... ...
Lamont, James H., & Co. Ltd. ... ...
Le Bas Tube Co. Ltd. ... ...
Lee, Howl & Co. Ltd. ... ...
Lincoln Electric Co. Ltd. ... ... Facing P.288
Lind, Peter, Ltd. ... ...
Lionweld Ltd. ... ...

M

MacLellan, George, & Co. Ltd. 262
Macpherson, Donald, & Co. Ltd. ... ...
Magnetic Valve Co. Ltd. ... ...
Main, R. & A., Ltd ... ...
Major Robinson & Co. Ltd. ... .
McNeill, F., & Co. Ltd. ... ...
Meltham Silica Fire Brick Co. Ltd ... ...
Metal & Pipeline Endurance Ltd. ... ...
Meters Ltd. ... ...
Metropolitan Vickers Electrical Co. Ltd. ...
Midland Iron & Hardware Co. (Cradley Heath) Ltd. 294
Milne (Edinburgh) Ltd. ... ...
Mint, Birmingham Ltd. ... ...
Mitchell Engineering Ltd. ... ...
Mitchell, H., & Co. 266
Moler Products Ltd. 268
Monk, A., & Co. Ltd. ... ...
Murex Welding Processes Ltd. ... ...

N

National Enamels Ltd. ... ...
Neal, R. H., Ltd. ... ...
Neville, J. C., Ltd. ... ...
New Conveyor Co. Ltd. ... ...
Newton Chambers & Co. Ltd. ... ... Cover IV
Norwest Construction Co. Ltd. ... ...
Nu-Swift Ltd. ... ...

O

Oxley Engineering Co. Ltd. ... ...

P

Parkinson & Cowan (Gas Meters) Ltd. ... ...
Parkinson Stove Co. Ltd. ... ...
Pass, E., & Co. Ltd. ... ...
Peebles & Co. Ltd. ... ...
Perl Controls Ltd. ... ...
Plenty & Son Ltd. 263
Power-Gas Corporation Ltd. ... ...
Press, William, & Son Ltd. ... ...
Pyrene Co., Ltd. ... ...

R

Radiant Heating Ltd. ... ...
Radiation Ltd. 282, 283
Rawlplug Co. Ltd. ... ...
Reavell & Co. Ltd. 293
Ride & Bell Ltd. ... ...
Roberts, R. E., & Sons Ltd. ... ...
Robinson, J. H., & Co. (Liverpool) Ltd. ...
Royston, Geo., & Sons Ltd. ... ...
Rozalex Ltd. ... ...

S

Salter, T. E., Ltd. 271
Saunders Valve Co. Ltd. ... ...
Sawyer, Geo. E., Ltd 293
Scientific & Projections Ltd. 258
Senior Economisers Ltd. ... ...
Shell Chemical Co. Ltd. ... ...
Siebe Gorman & Co. Ltd. ... ...
Sigma Instrument Co. Ltd. ... ...
Silvertown Rubber Co. Ltd. ... ...
Simon, Richard, & Sons Ltd. ... ...
Smith & Nephew Ltd. ... ...
Smith Meters Ltd. ... ...
Smith, Thos., & Sons (Rodley) Ltd., ...
Spanner Boilers Ltd. ... ...
Spencer-Bonecourt Clarkson Ltd. ... ...
Sperryn & Co. Ltd. ... ...
Stanton Ironworks Co. Ltd. ... ...
Staveley Iron & Chemical Co. Ltd. ... ...
Stein, John G., & Co. Ltd. ... ...
Stewart & Gray Ltd. ... ...
Stewarts & Lloyds Ltd. ... ...
Stillite Products Ltd. ... ...
Stoves Ltd. ... ...
Strachan & Henshaw Ltd. ... ...
Stringer Bros. ... ...
Sugg, Wm., & Co. Ltd. ... ...
Sutcliffe Speakman & Co. Ltd. ... ...
Sutherland, A. G., Ltd. 267

T

T & T Works Ltd. ... ...
Teddington Refrigeration Controls Ltd. ...
Thorp, Thomas, & Co. Ltd. 296
Tully Engineering Co. Ltd. ... ...
Turners Asbestos Cement Co. Ltd. ... ...

U

Underpressure Engineering Co. Ltd. 293
United Gas Industries Ltd. 259
United Kingdom Construction and Engineering Co. Ltd.

V

Vaughan, Edgar, & Co. Ltd. ... ...
Vauxhall Motors Ltd. ... ...
Visco Engineering Co. Ltd. 266

W

Wakelin, F. H., Ltd. ... ...
Walker Bros. Ltd. ... ...
Walker, C. & W., Ltd. ... ...
Walker, Crosweller & Co. Ltd. ... ...
Walkers (Century Oils) Ltd. ... ...
Waller, George, & Sons Ltd. ... ...
Walter King Ltd. 292, 293
Ward, Thos. W., Ltd. ... ...
Weir, G. & J., Ltd. ... ...
Wellington Tube Works Ltd. ... ...
West's Gas Improvement Co. Ltd. ... Cover III
West's Piling & Construction Co. ... ...
Westwood & Wrights Ltd. ... ...
Whessoe Ltd. 261
Whitley Moran & Co. Ltd. 262
Whitlock Bros. Ltd. ... ...
Widnes Foundry and Engineering Co. Ltd. ...
Wilkes, A. H., & Co. Ltd. ... ...
Williamson, Cliff, Ltd. ... ...
Wilson, George, Gas Meters Ltd. ... ...
Winn & Coales Ltd. 260
Woodall-Duckham Construction Co. Ltd. ... 281
Wood, Hugh, & Co. Ltd. ... ...

Y

Yorkshire Copper Works Ltd. ... ...

Agencies ... ...
Appointments Vacant 294
Appointments Wanted ... ...
Books ... ...
Contracts Open ... ...
Educational 294
Fellowship ... ...
Miscellaneous ... ...
Patents ... ...
Plant &c. For Sale 294
Plant Wanted. ... ...
Publications ... ...
Public Notice ... ...

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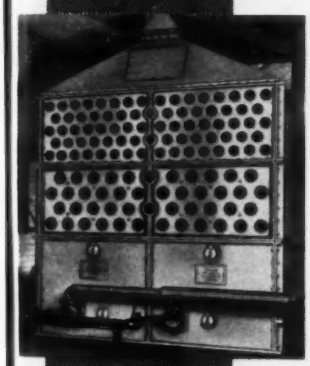

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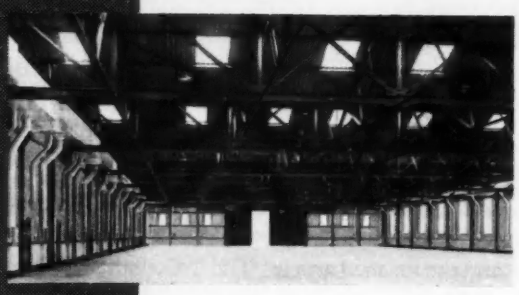

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Gas Journal

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109TH YEAR

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CONTENTS

EDITORIAL COMMENT

	Page
Mr. Cleator Asks Some Questions	273
Discussions Discussed	274
E.G. News	274

CORRESPONDENCE

Discussion Time ; Accent on Youth	276

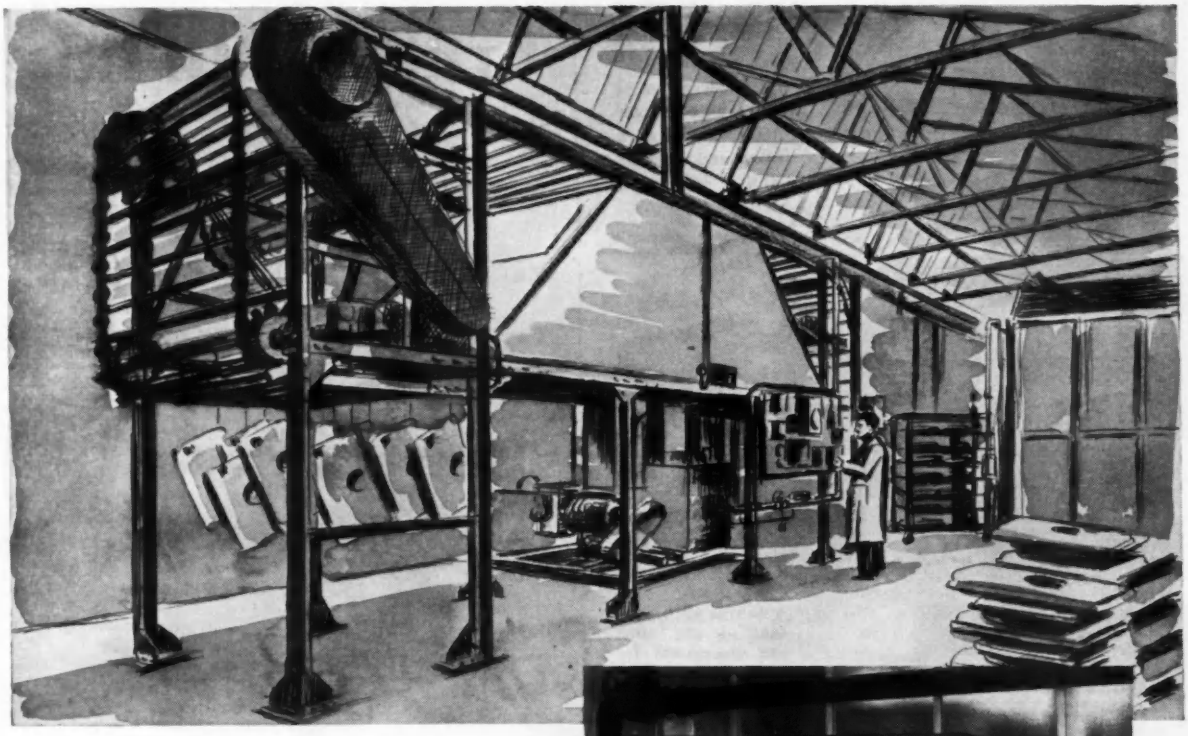
NEWS OF CURRENT EVENTS

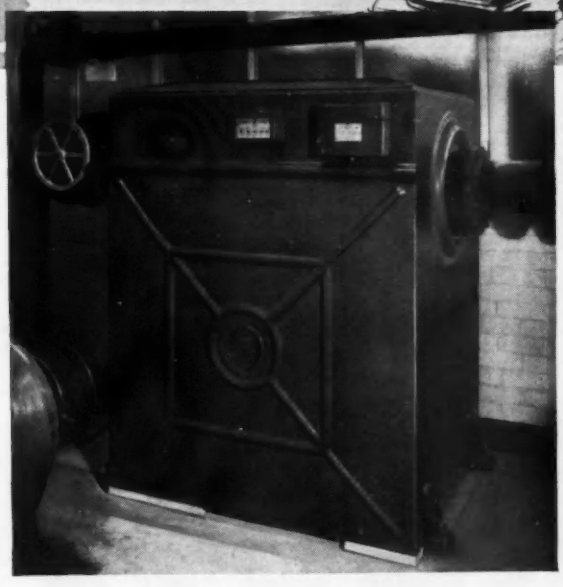
Personal	275
Obituary	275
Dr. G. E. Foxwell : An Appreciation by Sir Henry Jones	275
New Lincoln Electric Factory	277
Engineers' Guild Secretary Calls for Action	277
Centralised Isle of Wight Production	277
'Industrial Application of Air Heated by Gas'	277
The New Dorman Long Coking Plant	278
Bulk Supply Plan Will Save Coal	280
Diary	280
Manchester Section A.G.M.	280
Company News : Parkinson & Cowan, Londonderry, Lancashire Dynamo, Parnall (Yate)	284
First 'Tennis-court' Atom Plant Opens	284
Managers Attend Study Course	284
Retorts Cooled Off in 4 Hours	285
Day by the Sea for North of England I.G.E. Section	285

TECHNICAL RECORD

Co-ordinated Production in a Grid Area. By G. E. Anderson	286
Gas in France	291

PUBLISHERS' NOTICE, SEE PAGE 293





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Gas Journal

VOLUME 290. No. 4895. MAY 8, 1957. 109th YEAR

Mr. Cleator Asks Some Questions

MR. J. R. CLEATOR'S Chairman's Address to the North of England Section of the I.G.E. last Friday was primarily concerned with sales matters and was certainly not lacking in controversial comment. The fact that during his 42 years in the industry Mr. Cleator has had experience of manufacture, distribution and sales made his remarks doubly interesting.

Recognising the fact that the Clean Air Act gives the industry an excellent opportunity to increase the domestic load, Mr. Cleator holds very definite views about the way in which the gas industry should meet the challenge: ' I am satisfied,' he says, ' that the industry should go all out for selling gas and not coke to the areas which have been declared by the various local authorities to come within the Clean Air Act. Surely we are the gas industry first and foremost, and coke should only be used for gas manufacture? '. He points out that the area covered by the Northern Gas Board is using more coke oven gas every year and is likely to continue to do so in view of the many new coke oven plants now being erected. Not unreasonably he asks, where is the coke to come from for the domestic consumer? He goes on to assert that he is not a believer in using coke in domestic fires because of the increase of sulphur in the atmosphere which, he says, is far more dangerous than smoke. By concentrating on gas and not coke for the controlled areas the consumer will have greater satisfaction and so will the industry. He then contrasts the work entailed in cleaning domestic grates, carrying fuel, etc., with the ' on tap ' service offered by gas but, oddly enough, he makes no mention of the relative costs of the two fuels.

However, he has something to say about tariffs, pointing out that we have on the one hand part tariffs with low commodity charges, and on the other graded scales according to consumption and rebate based on rateable value, number of rooms, etc. Despite area conditions and varying classes of consumer, he feels that a general basis should be adopted nationally, and in this regard maintains that for all classes of consumer it is better to have a block charge at a standard price high enough to cover overheads and then a considerable reduction on the next block, thus giving encouragement to consumers to purchase additional appliances and use more gas.

Thereafter his address takes the form of a number of leading questions to some of which we feel very tempted to supply the answers. For example, he asks whether the statement ' profits are made in the retort house ' is as true today as yesterday. The answer, surely, is that it is not and that the economics of the industry are far more bound up with the sales organisation than they were in the past. Again, Mr. Cleator points out that there are now more saleswomen employed in the industry and asks, why not a saleswomen's association? The suggestion is a peculiar one for several reasons. It is difficult to see what possible advantage could result from separating the sexes in this manner. After all, despite their title, gas salesmen's circles number women among their members and indeed the ladies form a most helpful part of the organisation. To separate them from the menfolk would surely serve to damage the unity of sales purpose which, after all, is the fundamental reason for holding all meetings of this kind.

From this (to us) new idea Mr. Cleator turns to the hoary old problem of commission on sales. He asks: ' Is it to the best advantage that a commission should be paid on the sale of appliances? ' Our answer is that despite diversity of conditions such as different income groups, saturated or unsaturated districts, large or small consumers, keenness of competition, etc., it *is* to the advantage of the industry to pay commission to its sales employees. Clearly our views are not those of Mr. Cleator who answers his own question by maintaining that it is far better that adequate remuneration should be paid to all sales people without thought of further reward other than promotion. Against this view we would put forward two arguments: That there is no reason to suppose that the gas industry is fundamentally different from other large businesses in its sales problems, and that these other organisations make abundant use of incentive by commission; and that because one pays commission it does not necessarily mean that the salesman is dependent on commission in order to make

a comfortable living, an adequate basic salary being the first requirement in any organisation which values service to the consumer.

Mr. Cleator's next point concerns makers' representatives 'canvassing' in board areas and he asks whether this practice is to the industry's advantage. He feels that more good would accrue by having 'our own individual demonstrators and sales people' but whether by this he means additional staff or making better use of existing staff is not clear. It would appear that his chief complaints about this practice are that high pressure salesmanship tends to sell appliances at such a rate that it becomes impossible to install them in a reasonable time —an argument which would make the average manufacturer's hair stand on end!—and also that since someone has to pay for manufacturers' demonstrators the price of the appliances might be reduced. We cannot agree with this argument at all and, indeed, we believe that manufacturers' sales representatives engaged in this type of work act as a considerable spur to local sales staff and as far as the public is concerned, do the industry a considerable amount of good.

The next question concerns hire purchase and the profit made on appliances. Mr. Cleator is convinced that all appliances should be sold at just sufficient profit to cover cost together with interest charges. Of appliance installation he asks, would it not be fairer to charge for material used plus fixing time at cost and regard the gas used as our first consideration? For our part we have a good deal of sympathy with this view, believing that in general profit margins on appliances and fixing are too great. Then comes the rather amusing question, why not weekly hire purchase payments instead of quarterly or monthly? It is pointed out that insurance companies find that this arrangement works, and that even if it does cost a little more, it ensures that contact is maintained between the customer and the board. Well, why not?

Discussions Discussed

NOT surprisingly in view of the frank sentiments expressed, our editorial 'Free Speech for Discussion Time' has aroused a good deal of comment. It will be remembered that our remarks were divided into two parts: The first criticised the fear of repercussions which is destroying free speech at technical meetings; the second drew attention to certain aspects of these meetings which might be made in order to arouse greater interest and more lively exchanges of opinion. All correspondents have agreed with the sentiments expressed in the first part of the editorial and it is not without significance that some of these congratulatory letters were sent anonymously! Two of the letters which we publish this week were written by senior gas board officers and the third by a well-known figure from the contractors. Presumably because of the reluctance to air one's opinion publicly, to which we referred in our editorial, all three correspondents have chosen to write under *noms de plume*. They have been selected for publication because the first, that signed 'Cui Bono,' puts forward the author's point of view, and the other two because they appear to typify the general reaction in the industry. Readers will no doubt be amused by the description given by 'Cui Bono' of certain discussion time 'types' and will be largely in agreement with his very sensible suggestions. Pointing out that it is because the collection of material for a paper may have taken years and its preparation many months, that the author naturally wishes to present the whole picture, this writer suggests that the author should be allowed full scope but that the paper should be circulated to members well in advance of the meeting; the author should then present a précis for reading at the meeting. Equally, where extended replies are necessary, these should be dealt with in writing for later circulation. He comments scathingly on the secretaries/organisers of technical societies who cajole authors into writing papers and then insist on condensing their speaking time to 45 minutes (it will be remembered that this was also our recommended speaking time).

Although we have much sympathy for the views expressed by this correspondent we cannot agree with his implication that technical papers cannot be read *in toto* in three quarters of an hour. Brevity is allegedly the sole of wit, but it is also the essence of many a serious contribution to technical literature. It is not without significance that a handful of the best brains in the gas industry have been able to present papers of major importance which could be read within this period of time. Economy of words is surely something all authors should aim for.

E.G. News

RECENTLY we announced the Eastern Gas Board's plans to follow the example set by most other gas boards and produce an area magazine. Those plans have now reached fruition and yesterday we saw the first issue of the new publication *E.G. News*. Previously the area had been served by six divisional magazines of varying merit, size, style and frequency of publication. The best of these—Tottenham's *T.D. News* and Watford's *Contact* —appeared bi-monthly. Both had full-time editors who will now be responsible for the new paper. Their task is a difficult one in view of the sprawling area to be covered; the needs and tastes of urban Tottenham may differ from those of, say, sparsely populated Norfolk. Nevertheless, the Board is determined to knit together the whole area by this means and the project has been approached with the utmost care. Perhaps the most significant step is the creation of divisional editions of the eight-page newspaper-style publication, one page being devoted to divisional news.

Sir John Stephenson, the Chairman of the Board, writing in the new paper, explains why it was decided to wait until now to produce an area paper: 'It sprang from my desire at the beginning to preserve local atmosphere and the traditions which had been built up over the years. I felt that a good way of doing this was to preserve for a limited time the local magazines.' Sir John goes on to say that the formative years of the Board are now passed, and that although the original organisation remains, divisional boundaries are being removed for a widening field of functions.

For our part, we think Sir John was wise not to plunge into the creation of an area magazine immediately after nationalisation. As it is it has been possible not only to give the most careful consideration to the form the area paper should take, but also to choose its moment of introduction. The result is a publication which should go a long way towards satisfying those who may lament the passing of the divisional magazines and should achieve its purpose of introducing a greater degree of area consciousness on the part of employees.

Personal Notes

MR. GEORGE H. SHENTON, of St. Helens, and MR. JOHN BYROM, of Stalybridge, the two oldest members of the Manchester District Junior Association of Gas Engineers, celebrate their 80th birthdays this year. Mr. Shenton has been a member of the Association for 54 years. He joined St. Helens Corporation in 1896, went to the Rainford Gas Company in 1913, as Manager, returned to his native St. Helens when the Corporation took over the Rainford Company, and retired in 1946 as Assistant Distribution Superintendent. Mr. Byrom entered the gas industry at Stalybridge nearly 60 years ago. He spent more than 40 years with the Stalybridge Corporation undertaking, 'in two parts,' and retired with the position of Assistant Engineer. He was with the Grimsby private undertaking for 18 years, before returning to Stalybridge for the 'second part' of his service. Mr. Byrom retired in 1946 at Prestatyn, he having prolonged his service on account of the shortage of personnel during the last war. He lives at Stalybridge and, like Mr. Shenton attends all Junior meetings held in the district.

MR. J. D. OLDING, the founder of Jack Olding & Co., Ltd., relinquished his position as Chairman of the Board of Directors, and was appointed President of the Company on February 12. In his place, MR. A. O. BLUTH, formerly Vice-Chairman, became Chairman. The following appointments to the Board have been made as a result of the resignations of MR. G. MORAY STEPHENSON, formerly Sales Director, and MR. W. H. JAMES, formerly Service and Parts Director, who have both joined Vickers-Armstrongs (Tractors), Ltd.: MR. R. J. DUDLEY becomes Sales Director and MR. A. F. BACON Service and Parts Director.

COLONEL H. HASWELL PEILE of Ponteland, a former Durham colliery owner, and a part-time Member of the Northern Gas Board, has been appointed Chairman of the Peterlee New Town Development Corporation, Co. Durham. Colonel Peile is Chairman and Joint Managing Director of Weardale Lead, Ltd.

MR. ROBERT WRIGHT, foreman carpenter at Willoughby Lane works, Tottenham, has retired. He had completed 51 years service. His father, Mr. William Wright, had 50 years service, and his grandfather had worked at Willoughby Lane works for 25 years. Mr. Robert Wright's younger brother has worked with the Tottenham undertaking for 35 years. Total: 161 years' service.

MR. A. R. CORFIELD has been presented with a certificate and a cheque in recognition of 40 years' service with the Newtown undertaking of the Wales Gas Board.

MR. GORDON FANTOM, of Greenacres, Groby Lane, Newtown, Linford, Accountant of the Leicester gas undertaking, was presented with a gold wristlet watch by Mr. H. B. Taylor, Divisional General Manager, on behalf of the East Midlands Gas Board in recognition of having completed 46 years in the gas industry. Later Mr. Fantom was presented with an oak mantel clock and bedroom or travelling clock by Mr. W. R. Smout, Divisional Accountant, as a mark of esteem from his colleagues on the staff on the occasion of his retirement from the Gas Board. Mr. Fantom was chief accountancy assistant to the Stockport Corporation gas department, before he came to Leicestershire in 1930.

MR. B. B. FLORENCE, Gas Manager at Inverbervie for nearly three years, has been appointed Manager at Inverurie and Oldmeldrum, Aberdeenshire. He was trained at the gasworks in his native Arbroath.

MR. J. D. HOWDEN HUME, Production Engineer, and MR. J. D. YOUNG, secretary, were appointed Directors of James Howden & Co., Ltd., Engineers, of Scotland Street, Glasgow. MR. J. S. A. PEARSON, Controller, and MR. N. ZOLLER, General Works Manager, were appointed Local Directors.

MR. H. BLAIR, Assistant Manager at Bankfoot coke works, Crook, Co. Durham, for about three years has been appoined Manager of the works, in Place of MR. W. E. MORDECAI who retires in June. Mr. Blair joined the Crook works in 1923 and became a foreman 20 years later. In 1948 he was appointed senior foreman, and in 1953 was transferred to Horden Coke works as Assistant Manager. He returned to Bankfoot works some months later in a similar capacity.

SIR HAROLD WRITES A LETTER . . .

MR. H. STANLEY TAYLOR, former Chairman of Bath Gas Company, and Mrs. Taylor celebrated their diamond wedding anniversary on April 27.

In 1935 Mr. Taylor was President of the British Commercial Gas Association. Sir Harold Smith, Chairman of the Gas Council, in a letter of congratulation, writes: 'The occasion has prompted me to look again at some of the B.C.G.A. Bulletins of the 'thirties, and they have reminded me of the great debt which the gas industry then owed and still owes to you and other Presidents of that body who did so much to further the cause of gas. They were keen and enthusiastic days . . .'

Mr. and Mrs. Taylor live at Bewdley House, Widcombe, Bath.

Obituary

MISS J. E. LYONS, Deputy Chief Home Service Adviser, South Eastern Gas Board, died on Good Friday, aged 53. Joining the South Metropolitan Gas Company in 1933 as a cookery demonstrator, she was later appointed Home Service Adviser (then a senior office). She was given her last position in January, 1953, and had been operating from Old Kent Road in the Metropolitan Division.

MR. WILLIAM HENRY SISMEY, who founded the Halifax firm of carbonising engineers, W. H. Sismey & Co., Ltd., has died at his home, Bankwell, Whitehall Road, Halifax. Mr. Sismey, who was 71, was Managing Director of the Company, and was also a Director of Sismey and Linforth, Ltd., Birmingham, and of the Elms Hotel, Morecambe. Mr. Sismey leaves a widow, a daughter, and two sons who are Directors of the Halifax firm.

DR. G. E. FOXWELL: AN APPRECIATION BY SIR HENRY JONES

DR. GEOFFREY EDWIN FOXWELL, who had been a Member of the Institution of Gas Engineers since 1933, was a prominent figure in the fuel world for so long that it is hard to imagine discussion of fuel policy taking place without him.

Beaver Committee

He did much to focus public attention upon the efficient use of fuel and, by his work as a member of the Beaver Committee, played a great part in directing public opinion towards an acceptance of clean air as national policy.

He was responsible for Appendix II of the Beaver Report and without this appendix it might well have been that the implementation of clean air policy within the immediate future would have been regarded as impracticable. In his younger days he made considerable contributions toward a better understanding of the processes of carbonisation.

An Enthusiast

He will be remembered as an enthusiast, quick in discussion but always cheerful and always ready to listen to those who might hold other views.

April 30, 1957.

Discussion Time: An Author Thinks We're Unfair

DEAR SIR,

I have read your editorial of April 24 with interest and feeling, as one of the victims concerned, *i.e.*, an author, and suggest that your remarks are unfair to such, in not giving consideration to the extensive work and thought required in the preparation of technical papers.

The provision of the material for a paper may require several years of development/research and testing. The preparation can take many months. The author will naturally wish to present the whole picture to a selective audience; essentially for their own benefit, as he is endeavouring to disseminate useful information, and obviate duplication of effort. In many instances the above is superimposed on his routine duties.

At the other end are the secretaries/organisers of technical societies, institutions, colleges, universities, etc., intent upon cajoling authors to fill their seasonal programmes, but insisting upon condensation of speaking time to 45 minutes, irrespective of any possible damage to or belittlement of the paper concerned. As the full papers are frequently issued only at the time of a meeting, an author may have to extemporise at short notice, in order to put over essential points or features. The import of this is not realised by the audience who have not read the paper, and both parties can feel frustrated or dissatisfied. In my view, a short paper confined to 45 minutes can be quite ineffective, when allowance is made for the introduction, conclusion, and any intervening generalities or platitudes.

Comments on other views are as follows:

1. *Introduction to Discussion.*

'Beware the Greeks when they bring gifts.' The first speaker usually claims long friendship with the author, and then proceeds to strip him of all virtuosity, leaving the impression that the subject matter of the paper has been well covered previously, mostly by himself. The victim is then thrown into the discussion arena.

2. *Criticisms.*

These come mainly from standard types:

The younger empire-builder, itching to see his name in print.

The inevitable member who likes to hear the sound of his own voice. His technique is to make a 'gaffe' that will be remembered more than the paper.

The member who feels that he should have thought of it first, and hastens on to the band-wagon to make up for lost time.

The older empire-builder, who is determined to keep his name in print until he retires.

The 'rara avis,' the member who raises a debating point.

3. *Nervous strain.*

Most authors are unused to public speaking, and sensitive to critical discussion, both from the required briefness of replies and from having to be wary of policy matters. This frequently causes a fair degree of nervous strain.

4. *Remuneration.*

Negligible, if any, and completely unrelated to the time and effort involved in the preparation of a paper.

5. *Suggestions.*

To obtain the full benefit of work done, and mutual satisfaction to all parties concerned, the following premises are given:

That an author should be allowed full scope in his paper.

That members should receive any paper two weeks prior to a meeting.

That members should read such papers, if only from courtesy.

That the author should make a precis covering salient features of his paper, for reading within the allotted time, on the assumption that the first three premises have been met.

That where extended replies are called for, these should be dealt with in writing for later circulation.

In general, I feel that unless something like item No. 5 is done, the various requesting bodies will find that this source of cheap exploitation will inevitably peter out.

CUI BONO.

May 3, 1957.

Correspondence

DEAR SIR,

Your leader on this topic makes sorry reading, the more so as it represents so much of the truth; it focusses attention on what is surely one of the more disquieting tendencies in this (and other) nationalised industries.

The sparkle has gone from our gatherings and in its place we have flatness and dullness. While one must agree with you that part of the trouble arises from fear, there is also the point that in general there is a shortage of people competent to engage in rational discussion. Another reason for this onset of aridity may be the extremely short time allowed in the Institution programmes (normally one hour) for presentation and discussion. The position now is that rarely (if ever) does the author have time to reply, even to the blunted shafts which are projected apologetically at him.

Your title is apposite; perhaps the sequel will deal with the major operation, which must follow the first aid in order that we may be freed of the effects of the prevailing sleeping sickness.

Yours, etc.,
PROTHERM.

May 3, 1957.

DEAR SIR,

Your leader of April 24 will be gladly welcomed by the majority of your readers, especially by the older men.

It is true that many engineers are afraid of offending the 'handful of dignitaries' who in turn might be envious of the knowledge of their junior staffs.

Holding companies and afterwards nationalisation brought fear and disappointment to many gas managers, assistants and others.

In 1940 when holding companies were rife, the late Mr. A. S. Nisbet, of Paisley, in his presidential address to the Waverley Association of Gas Managers, said: 'I say, unhesitatingly, that a manager was much better off 40 years ago than he is today. Then he was pretty much his own master. Like the redoubtable Captain Kettle . . . if he was going to be a king he'd carry a full king's ticket. He could develop to the full in his works his power of initiative and individuality . . . to-day he is hedged round by new regulations and restrictions. In many ways he is the administrator of other people's enactments—these not always above criticism . . . '

Have pride in and conditions of service improved since Mr. Nisbet delivered his address in 1940 or not?

Presidents and writers of papers should be more frequently chosen from men engaged outside the gas boards.

Yours faithfully,
'AN OLD HAND.'

May 3, 1957.

ACCENT ON YOUTH

DEAR SIR,

Although most people will agree with the views expressed in your editorial Accent on Youth, those who, like myself, have worked for many years among young people, know that the restless teenage group with its fluctuating interests is the most difficult of any to cater for. However, recognition of its importance has already been shown by the very successful Youth in the Kitchen competition organised by the Gas Council.

The Women's Gas Federation also have this matter very much in mind and are now considering the formation of a Junior Section. This would be open to the real youngsters and not to the young housewives in the early 'twenties whom the Federation itself aims to attract. Experience shows that the newer branches do in face attract the younger women. An example of this was demonstrated in the newly-formed Reading branch, where it was quickly found necessary to form a second branch with meetings in the evening to meet the demand by the young housewives who could not attend in the afternoon. The problem with young housewives with small children is not that the Federation does not make an appeal, but that they are really 'housebound' during the day.

Yours faithfully,
VERA LAUGHTON MATHEWS.
Adviser on Women's Affairs to the Gas Council.

April 13, 1957.

NEW LINCOLN ELECTRIC CO. FACTORY OPENED LAST WEEK

Industrial Progress in Welwyn Garden City

OFFICIAL opening ceremony of the new 150,000 sq. ft. factory of the Lincoln Electric Co., Ltd., at Welwyn Garden City, was held on May 3. The project marks a further stage in the industrial progress of the Garden City and opens up yet another development area in the new town.

The first sod was cut on the 11-acre site just over a year ago by the Managing Director, Mr. R. E. Clipsham, who, at a luncheon following the ceremony, drew attention to the 'happy coincidence' that the Company was that year celebrating the 21st anniversary of its inauguration in Britain.

Link Building

Fronted by the south-east industrial road, which was still under construction when work began, the new factory consists of six bays, each 50 ft. by 500 ft. There is a two-storey block of offices, the ground floor of which is mainly taken up by a laboratory and drawing offices. A link building connects the block of offices to the factory, and in this is accommodated a canteen, social room, welding school, demonstration room, electrical development room and cinema. The site lies between Attimore Hall Farm and the Hertford branch railway line.

Necessary Accommodation

The Company was first established in the Garden City by Mr. R. M. Gooderham and Mr. Clipsham's brother, who took over the old Welwyn match factory, a single-storey building. Steady progress of the Company over the years has necessitated the provision of the new and additional factory accommodation. In 1955, the Company became associated with the old-established group of companies, Guest, Keen and Nettlefolds, Ltd.

Main contractors for the new factory were Taylor Woodrow Construction, Ltd., while Welwyn Garden City Development Corporation were the builders and architects.

'Action' Says Engineers' Guild Secretary

SALARIES in the professions have fallen so greatly in value, compared even with ten years ago, that action of a national character needs to be taken.

This was the conclusion reached in a brief review of the situation given by the National Secretary of the Engineers' Guild (Mr. J. G. Orr) to the Edinburgh Centre of the Guild.

Long Overdue

Mr. Orr said that the recent Budget had given a small amount of long overdue relief to some professional people, but only to a limited proportion. The majority of professional people would look for some relief in next year's Budget.

Is it Fair?

'This is not a question of fighting against a social revolution, nor of cavilling at the betterment of living conditions generally, to which professional engineers have made great contributions. The question is whether it is fair to the present generation of professional people that they should be anything from 15% to 30% poorer than they were before the war, in a country which is on average 7% richer. Is this the way to ensure a sufficient flow of suitable recruits to the profession from subsequent generations?'

'Industrial Application of Air Heated by Gas'

In our report of the discussion to Mr. H. R. Cooke's paper 'Industrial Application of Air Heated by Gas' (p. 142, April 17) Mr. W. Johnson was quoted as saying 'The Gas Light and Coke Company always had a different approach . . .' This should have read 'The South Metropolitan Gas Company, etc. . . .'

Centralised Isle of Wight Production

KINGSTON CEREMONY

THE Southern Gas Board's new works on the east bank of the Medina River at Kingston, Isle of Wight, will be opened by the Duke of Wellington at noon on May 30. Guests at the opening ceremony will be able to make a tour of inspection, and will lunch on board the Red Funnel Line's M.V. 'Balmoral.'

Gas making began at Kingston on April 12 and this works will soon produce the whole of the island's supply. Manufacture has already stopped at Ryde, Shanklin, Newport, and West Cowes, these installations now being simply distribution centres with gasholders retained for local storage purposes.

At Freshwater, manufacture will continue until laying of the new main from Newport is completed. At some future date these distribution centres will be automatically controlled. The old sites will be cleared.

The Board's sales and service arrangements will continue in all parts of the island.

The centralisation of production of coke, however, makes a beneficial change possible. From May 31 coke sales in the island will be carried out by approved merchants. Small sales at the works will cease. With only one centre of production it will be easier to ensure constant, high quality supplies from the carbonisation of best coking coal.

The registered office of the Colombo Gas and Water Co., Ltd., and the Hong Kong and China Gas Co., Ltd., is now 167, Gresham House, Old Broad Street, London, E.C.2.

Alderman R. Grindley (third from left), President of Coventry Savings Committee, is pictured presenting certificates to five Coventry savings groups to mark their 40 years' service to the movement. On the extreme left is Mr. F. C. Wilson, a Director of George Wilson Gas Meters Limited, who received a certificate for that firm's group.

THE DORMAN LONG COKING PLANT

A Simon-Carves Achievement

Largest Ever In Britain, It Can Be Duplicated

Part of coal handling plant to service bunker, with coke handling plant to blast furnaces in background.

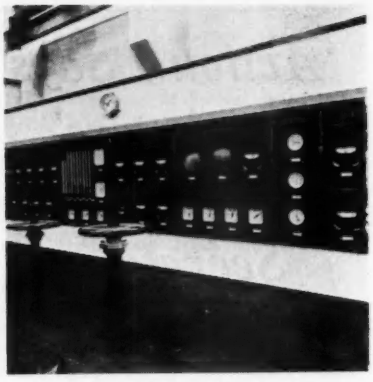
THE new coking plant at South Bank, Middlesbrough, was built by Simon-Carves Limited to provide metallurgical coke for the new Clay Lane blast furnaces of Dorman Long (Steel) Limited. It is the largest coking plant ever built as a single unit in Britain, and it comprises 150 ovens with a weekly throughput of 25,000 tons of coal as charged, together with complete coal and coke handling equipment and by-product plant. The entire installation is arranged so that it can be duplicated.

The coal handling plant is designed for extension to serve a future second coke oven battery, the present overall capacity being 310 tons per hour.

RECEPTION AND STOCKING

Coal is discharged by Strachan & Henshaw rotary wagon tipplers, wagon-thawing bays being provided for use on partly-frozen loads in severe weather. The tipplers discharge through grids into track hoppers feeding a belt to the primary crusher house, where coal over 1 in. is screened out and crushed to 80-90% below 1 in. by a British Jeffrey-Diamond Flextooth crusher.

The screen and crusher can be by-passed and the coal delivered direct to the stocking-out conveyor, which is 1,000 ft. between centres. This can discharge either over the end to a belt feeding the blending bunkers, or through travelling trippers to a 100,000-ton stocking ground, over which the coal is distributed by bulldozer; it is reclaimed also by bull-dozer, into hoppers feeding an under-ground conveyor to the blending bunkers.



Control panel in exhauster house.

Coal stocking-out conveyor and stocking ground.

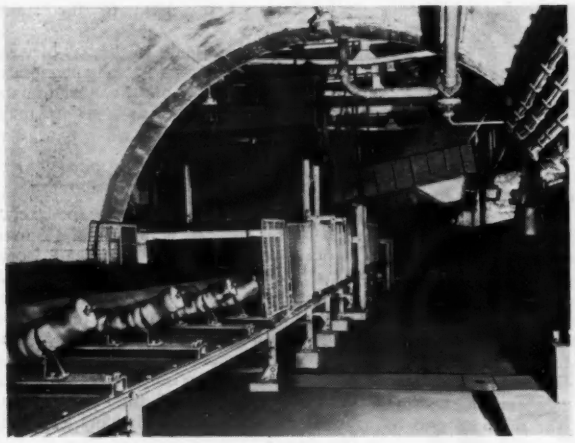
COAL DISCHARGE

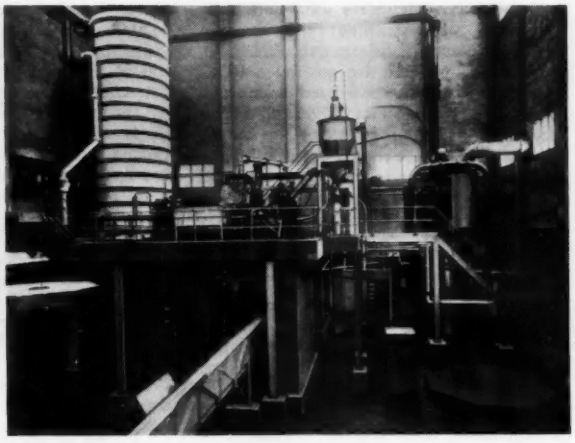
Fifteen blending bunkers, in two rows fed by two shuttle belts, provide 5,000 tons capacity. One bunker is reserved for non-coking coal, which is blended into the coking coal to improve the shatter index of the coke.

Coal is discharged from the blending bunkers by rotary feed tables and conveyed to a 50-ton surge bunker, provision being made for oiling the coal while on the conveyor. It is then fed to hammer mills for reduction to 80% below ¼ in., after which it passes by way of a paddle mixer on to a series of belts to the service bunker.

SERVICE BUNKER

The 5,000-ton service bunker is centrally placed between two batteries of 75 ovens and is divided into halves, each with six sets of discharge doors. It is filled by an automatic traversing reversible shuttle belt specially arranged to give uniform contribution over a rectangular area. The hydraulically operated bunker discharge doors are interlocked so that the six sets for each oven battery are operated in sequence, which may, however, be interrupted if





Left: *Receiving end of conveyor from tippler house to primary crushers, showing vibrating feeders.* **Right:** *Sulphate house with still on left.*

desired. They are also electrically interlocked with the charger cars so that the cars cannot be moved while the doors are open.

COKE OVENS

The ovens are of the twin-flue compound underjet type for heating by coke oven or blast furnace gas, and are divided into two batteries of 75, each draughted by a 280 ft. chimney. For ease of eventual rebuilding, each battery is sub-divided into five blocks of 15 ovens by intermediate buttresses.

Leading oven particulars are:

Length over sole	44 ft. 7 in. cold
Chamber height	14 ft. 9½ in. cold
Mean chamber width	1 ft. 5½ in. cold
Taper	2¼ in.
Weight per charge	19.26 tons wet
Gross coking time	19.2 hours approximate
Throughput of 150 ovens	25,000 tons per week wet

The ovens embody all the well-proved features of Simon-Carves underjet design. All regulating points are readily accessible, and the fireclay used in the lower part of the regenerators allows the dividing walls to be grouted while at work. The waste gas flues support the side platforms independently of the buckstays; the platforms are of the lowered type, with handrails on the outside. The ovens have single ascension pipes on the ram side, with liquor-sealed butterfly valves. The doors have self-locking latch bars and are clay-luted.

The oven heating system follows established Simon-Carves practice, with rich and lean gas mains in the basement. There are four reversing winches, two operating 30 ovens each and two 45 each.

There are two sets of oven machines, all D.C. operated. The Simon-Carves electro-magnetic interlock is fitted to the ram and the coke guide to prevent the ram from operating until the guide is correctly positioned. The coke cars are specially designed for long and trouble-free life between overhauls: A special branch from the coke car track leads to an overhaul bay with overhead gantry crane. The charger car has two sets of running wheels: The second set engages with ramped rails which lift the car over the junctions, thus preventing hammer action.

There is a quenching station at the chimney end of each 75-oven battery: these have automatic Audco pneumatic quenching valves, and the hoods are baffled to arrest steam-borne grit. The quenching water is drained through grids for removing coarse breeze and then flows to settling ponds with telpher grabs for fine breeze removal.

COKE HANDLING

From the coke wharf 500 ft. long the coke is conveyed at 160 tons per hour to the primary screen house, from which plus 2 in. and 2 in.-1½ in. coke goes either to the blast furnaces by belt or to rail wagons by boom loader: Road wagons can also be loaded. The minus 1½ in. coke goes to secondary screens, from which road or rail wagons can be loaded with de-breezed coke in sizes 1½ in.-1 in., 1 in.-¾ in., ¾ in.-⅜ in., and ⅜ in.-0.

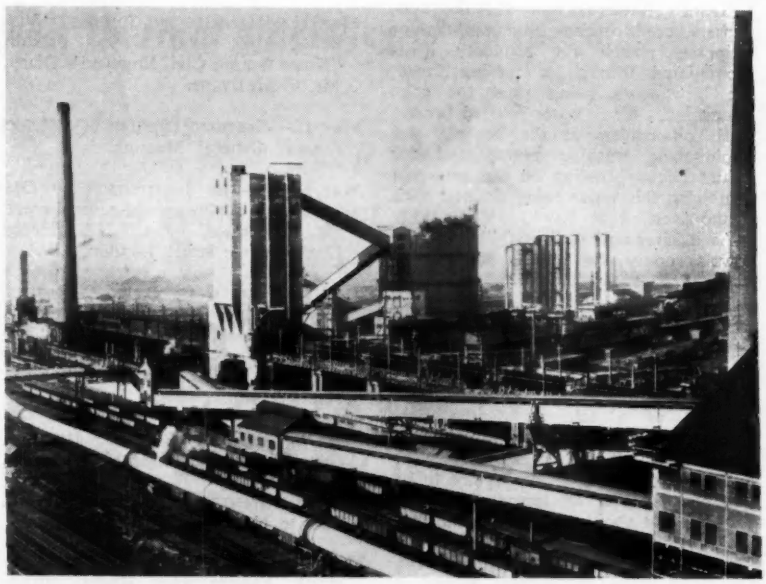
There is provision for receiving and screening 'foreign' coke and for the future installation of coke stocking conveyors.

BY-PRODUCT PLANT

The by-product plant handles the gas from the whole of the coal throughput and is arranged for duplication to serve a future oven battery. It is of orthodox design and embodies the indirect ammonia recovery system.

Two foul gas mains, one from each battery of 75 ovens, take the gas to primary condensers, each main having its own mechanical tar catch tank where primary tar and liquor separation takes place and from which the circulating liquor supply is drawn. The two foul gas mains unite in a common inlet to nine primary condensers (one spare) of the vertical water-tube counter-current type, which cool the gas to 25-30°C. at the exhauster inlets.

The two Richardsons Westgarth,



General view of coke ovens and by-product plant.

Brown-Boveri exhausters (one spare) are driven by steam turbine: they have a designed pressure differential of 100 in. W.G. and superheat the gas by 5-10°C. The gas passes to five secondary condensers (one spare) and thence through electro-detarrers to a three-stage naphthalene scrubber tower: The naphthalene is stripped from the wash oil and returned to the tar, the oil being cooled and pumped back to the scrubber.

ROYSTON SATURATOR

The gas then goes to two-stage ammonia scrubber towers with counter-current circulation of cooled liquor from the sulphate plant. Strong liquor from the first stage is pumped to the stills in the sulphate plant: Free ammonia only is recovered, and full use is made of heat exchange between incoming liquor and outgoing still effluent. One Royston saturator is installed, with provision for two more. The salt from two horizontal Watson Laidlaw centrifuges is dried in a Dunford and Elliott dryer and stored in bulk; recovery is by bracket-equipped fork-lift truck delivering either to rail wagons or into an elevator feeding a bagging-off bunker.

Provision has been made for installing wet H_2S recovery before the ammonia scrubbers.

Benzole is recovered by three tower scrubbers in series, using creosote oil which is stripped in the crude benzole still. The gas is finally freed of naphthalene in three static washers in parallel.

Part of the gas from the final naphthalene scrubbers is returned to heat the ovens, part is boosted by Holmes-Connersville boosters into a main to the Warrenby steel plant, and the rest goes to the Cleveland steelworks low-pressure main. A 3 mill. cu.ft. Klönne dry gasholder acts as a balance holder.

COOLING TOWER

Town's water is used for the condensers, crude benzole and naphthalene stripping plants: for economy it is recirculated through a cooling tower, the blow-down being used for coke quenching. River water is used for the wash oil coolers at the benzole and naphthalene washing plants and for effluent liquor cooling on the ammonia scrubbers, this water being drained back to the river.

As a safeguard against failure of the town's supply the cooling tower base serves as a reservoir holding some 115,000 gal. Further reserves are provided by two 50,000 gal. tanks at the top of the service bunker and an 86,000 gal. tank at ground level.

Dry saturated steam at 150 lb. per sq. in. is received from the existing steam-raising plant. The exhauster turbines are back-pressure machines, from which most of the process steam for the by-product plant is derived, a reducing valve on the high-pressure line serving to make up any deficiency. The steam supply to the exhauster turbines is superheated by a coke oven gas-fired superheater in order to minimise turbine blade erosion and provide some control over the back-pressure steam temperature.

Electricity is supplied from the Cleveland works turbo generating station, which is coupled to the national grid to meet load fluctuation.

GAS DISTRIBUTION

From a 5 mill. cu.ft. waterless holder at the blast furnace plant an 84 in. main goes to the oven battery, where it divides into two 60 in. mains passing into the oven basement.

The 45 in. rich gas main from the final naphthalene washers is connected to the 3 mill. cu.ft. holder and has the following connections taken from it:

(a) Connection to the boosters and thence to the steelworks high-pressure main.

(b) Two 22 in. mains to the two oven batteries.

(c) One 10 in. main to the steam superheater.

(d) One 45 in. main to the gas bleeder.

(e) One 24 in. main to the sinter plant.

Beyond the sinter plant connection the 45 in. main continues as a 42 in. main to the steelworks.

HYDRAULIC PLATFORM

An interesting point about the execution of this contract is the use of a Simon hydraulic platform for overhead work. This machine, which is manufactured in Dudley by Simon Engineering (Midlands) Ltd., another company of the Simon Engineering Group, is specially designed to give rapid access to overhead working positions which can only be reached with difficulty or waste of time by conventional methods such as ladders, scaffolding, bosun's chairs and the like.

It consists of a lorry mounted turntable with two articulated hydraulically operated booms carrying a working platform which accommodates two men and their tools and tackle: The rotation of the turntable and the lateral and vertical movements of the booms can be controlled either from the platform itself or from the turntable. The particular model used on the South Bank contract gives a maximum working height of 40 ft. and a maximum working radius of 26 ft., and by providing a fully mobile and rapidly operated means of access it has saved a great deal of time, labour and expense on overhead pipe-fitting, welding and similar types of work.

BULK SUPPLY PLAN WILL SAVE COAL

A START has been made on the first part of a scheme of the East Midlands Gas Board for providing a bulk supply of gas for Bourne, Lincs., and some 61,300 ft. of mains are to be laid between the two towns. The project will cost about £40,000, but the coal saving is likely to be about £3,000 a year. The Bourne supply will be automatically controlled from a control room at Spalding.

Diary

May 8-9.—IRISH GAS ASSOCIATION: Talbot Hotel, Wexford. Annual general meeting.

May 9-11.—SCOTTISH WESTERN JUNIORS: Visit to the Stanton Ironworks Co., Ltd., Nottingham.

May 11.—MANCHESTER JUNIORS: Visit to Lostock Hall works, Preston. 'Notes from a Civil Engineer's Diary,' Mr. B. M. Evans.

May 11.—EASTERN JUNIORS: Clacton. Annual General Meeting.

May 14-17.—THE INSTITUTION OF GAS ENGINEERS: 94th annual general meeting, Institution of Civil Engineers, Great George Street, London, S.W.1.

May 16.—THE COKE OVEN MANAGERS' ASSOCIATION, MIDLAND SECTION: Royal Victoria Hotel, Sheffield. 'The Clean Air Act, 1956, with Special Reference to Coking Plant,' Mr. G. E. Hall. 7 p.m.

May 18.—EAST OF SCOTLAND JUNIORS: Gas Showrooms, Kirkcaldy, A.G.M.

May 18.—WESTERN JUNIORS: Truro. Visit to Newham works.

May 20.—NORTH EASTERN G.C.C.: North Eastern Gas Board, Bridge Street, Leeds.

MANCHESTER I.G.E. ANNUAL MEETING

THE seventh annual general meeting of the Manchester Section of the Institution of Gas Engineers was held on April 26 at the Engineers Club, Manchester. Mr. J. M. McLusky was in the chair. Among those he welcomed were Mr. W. Hodkinson (Deputy Chairman, N.W.G.B.) and Dr. W. T. K. Braunholtz (Secretary, I.G.E.).

Mr. Hodkinson, presenting the I.G.E. certificates to successful students, said that they had joined the industry at a time of the greatest possibilities.

Fifty guineas was voted to the Benevolent Fund.

The following officers were elected for 1957-58: Chairman, Mr. R. L. Greaves, M.B.E.; Senior Vice-Chairman, Mr. J. G. Tilley; Junior Vice-Chairman, Mr. A. H. Nicholson; Hon. Secretary, Mr. J. Castle; Hon. Treasurer, Mr. A. Harrison.

Mr. McLusky then reported that Mr. A. H. Nicholson was resigning as Hon. Secretary, a position he had held since 1950. During that period he had been a tower of strength to succeeding Chairmen.

Mr. McLusky said Mr. J. H. Clegg was also retiring, after seven years as treasurer, and Mr. H. Hudson, on retiring from the industry was giving up his job as Assistant Secretary.

After lunch there was a visit to Pilkingtons glassworks.

Mr. Greaves then presented his address, which was published last week

To implement the Clean Air Act the best National Economic Solution is still achieved by installing W-D Continuous Vertical Retorts

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- ✻ **The flat**
- ✻ **The maisonette**
- ✻ **The small household**

The **NEW WORLD** Cadet is intended primarily for 2 or 3 persons,
but a whole meal for 4 can be cooked in the oven,
and, when occasion arises, the Cadet will even cater for 6.

The width is only 19¼″ or 17½″ without gas match.

The Regulo controlled oven has a forward flue vent and a drop down door.
The whole cooker has been designed for easy cleaning, and the oven has
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Company News

Parkinson & Cowan, Limited

GREATLY IMPROVED RESULTS AND FINANCES

Mr. H. P. Barker's Review

THE 57th annual general meeting of Parkinson & Cowan Ltd. was held on May 1 in London.

Mr. H. P. Barker, in the course of his review, said:

A record turnover in 1956 brought a consolidated net profit of £171,536 compared with a loss of £35,456 in 1955. After allowing for preference dividend, but before providing for debenture redemption and distribution profits tax, the balance represents an earnings rate of 35% gross (20% net) on our ordinary stock. I think you will agree that this is a satisfactory result.

The £390,000 debt to our bankers at the end of 1955 has been converted to a credit of £68,000.

Depreciation has absorbed £200,448 against £160,552 last year and stocks have been reduced from £1.58 mill. to £1.34 mill.

Dividends and Appropriations

In recommending a return to an ordinary dividend of 9% your Directors aim at achieving stability as well as eventual advancement in dividend policy. In addition to £27,600 credited to debenture redemption reserve it is proposed to add £50,000 to general reserve, and £12,613 to profit and loss balances.

Operations in 1956

In our domestic appliances activities we closed two factories and concentrated production at our main Birmingham works. In the now combined Parkinson-Monitor Division we have a first-class industrial asset of great potential.

Similarly in Measurement Limited (our Division concerned with the manufacture of liquid meters, pumps and electricity meters) we are concentrating our manufactures at one factory where we have space for eventual expansion.

Our Gas Meter Division continues to operate satisfactorily and the excellence of its products is obtaining growing recognition.

New Products of the Group

Our business is so diversified that I can only mention some of the new products which we have introduced in 1956. The Renown Mark Six Gas cooker made by the Parkinson Stove Company is proving an outstanding success. A range of devices has been developed by Measurement Limited which we collectively term 'fluid automation' for the metering and control of liquid processes in the food and chemical industries. This business is progressing rapidly. A new gas meter has been designed primarily for overseas markets. A range of high temperature radiant heaters has been introduced and progress is promising.

Staff

We try to treat all those who work in our Group as separate individuals and to give opportunity, training and security to each as best we may. In these days more than at any other time in industrial history the wealth of a company is no more and no less than the quality of those who work in it.

The report and accounts were adopted.

The retiring Directors Mr. C. H. Pearson and Mr. R. C. Symondson were re-elected.

COKE GRADING PLANT FOR LONDONDERRY

THE Londonderry Gaslight Company propose to install this year a £13,000 coke grading plant which will not only facilitate the handling of coke, but make it available to the public in all sizes necessary for household use.

This was stated by the Chairman, Sir Basil McFarand, at the annual general meeting of the Company.

The Chairman, who was moving the adoption of the report and statement of accounts, said profit for the year, after providing £8,756 for taxation, amounted to £15,803. From this sum transfers of £1,904 and £12,952 had been made to the special purposes fund and the renewals fund respectively.

LANCASHIRE DYNAMO

Lancashire Dynamo Holdings, Ltd., have recommended a final dividend of 7% on the ordinary stock, less tax, making a total of 11%, less tax, for the year ended December 31, 1956.

Net profit of the Group for the year, before taxation, amounts to £620,387 (£584,554), taxation is £342,160, to which is added taxation provisions of previous years no longer required £23,068, leaving a balance of £301,295 (£285,818), less £451 minority interests and £318 retained in subsidiary companies.

Group profits of Parnall (Yate) contracted from £548,564 to £374,629, but the distribution is again 12%. After deducting depreciation, tax, etc., the net profit of £135,752 compares with £235,447, to which is added £30,000 (£124,992) over-provided tax. The parent's profit fell from £406,923 to £157,956, but this time dividends of subsidiaries of £37,500 are to be added. The net profit of the parent is down from £142,387 to £47,111.

FIRST 'TENNIS-COURT' ATOM PLANT OPENS

THE world's first 'tennis-court' atomic power plant has begun operating in America, and was formally opened by President Eisenhower on April 29. Similar plants being marketed by a British company are now expected to produce electricity for only 1d. to 1½d. a unit.

The American plant, built for the United States Army, is at Fort Belvoir, near Washington. Occupying no more space than a tennis-court, it uses a reactor of the pressurised water type.

Mr. Ambrose Congreve, Chairman of Humphreys & Glasgow Ltd., of London, the British company marketing the plants outside America by agreement with the designers, ALCO Products Incorporated, said costs would be much lower than expected.

Capital cost of a 10 megawatt plant—big enough to provide light and heat for a community of 20,000 people is now put at about £1½ mill. or £150 a kilowatt, enabling power to be produced for 1d. to 1½d. a unit. These revised figures are based on European manufacturing costs. 'Further reductions may be possible when detailed figures are available in a month's time,' Mr. Congreve said.

When the plant was first announced in January, operating costs of between 1½d. and 2d. a unit and capital costs of £200 a kilowatt were quoted. 'These were based on American costings,' it was explained.

Enquiries for 'tennis-court' plants have been received by Humphreys & Glasgow Ltd. from authorities and companies all over the world.

Managers Attend Study Course

SALES and service officers and showroom managers from the seven divisions of the West Midlands Gas Board attended a five-day study course at the Board's education and training centre at Warwick recently.

'Sales and the Future' was the introductory lecture, given by Mr. A. V. Horsfall, Sales and Service Manager of the West Midlands Board. Three days were devoted to all aspects of salesmanship.

The technical aspect was dealt with by Mr. G. H. Potter of the Nechells Division, and Mr. V. R. W. Young, Education and Training Officer, who was responsible for the course, concluded with an assessment and summary of the main points.

Redundant Retorts Cool Off in Four Hours

'SHOCK QUENCHING'

PRODUCTION at Newport (Isle of Wight) came to an end in a cloud of steam recently as thousands of gallons of water were pumped from the River Medina nearby into the retort house.

A few minutes before the steam billowed from the windows and top of the retort house the employees had been busy fixing nozzles into two retorts, and as they left and sheltered under one of the railway arches their names were ticked off on a roll to see that nobody was left in the building.

Then came a 'thumbs up' signal from one of the engineers, and Station Officer H. Bradshaw, of Newport Fire Brigade, gave instructions for the pump on the quayside to begin working at the rate of 450 gal. a minute.

Normally Three Weeks

As the Island gasworks at Kingston began operating last Friday, and the Newport works were due to close, the Board had offered the Gas Council facilities for carrying out the 'shock-quenching' experiment.

It was being applied to two of the eight retorts, which would be cooled in four hours. The others would cool in the normal manner, taking three or four weeks.

Production at the works had been cut down to 25% and was producing until the moment the experiment was carried out.

Dr. R. J. Davis, of the Gas Council's Fulham Research Laboratories, said the experiment was being carried out to obtain samples of sooty carbon scurf from the retort walls.

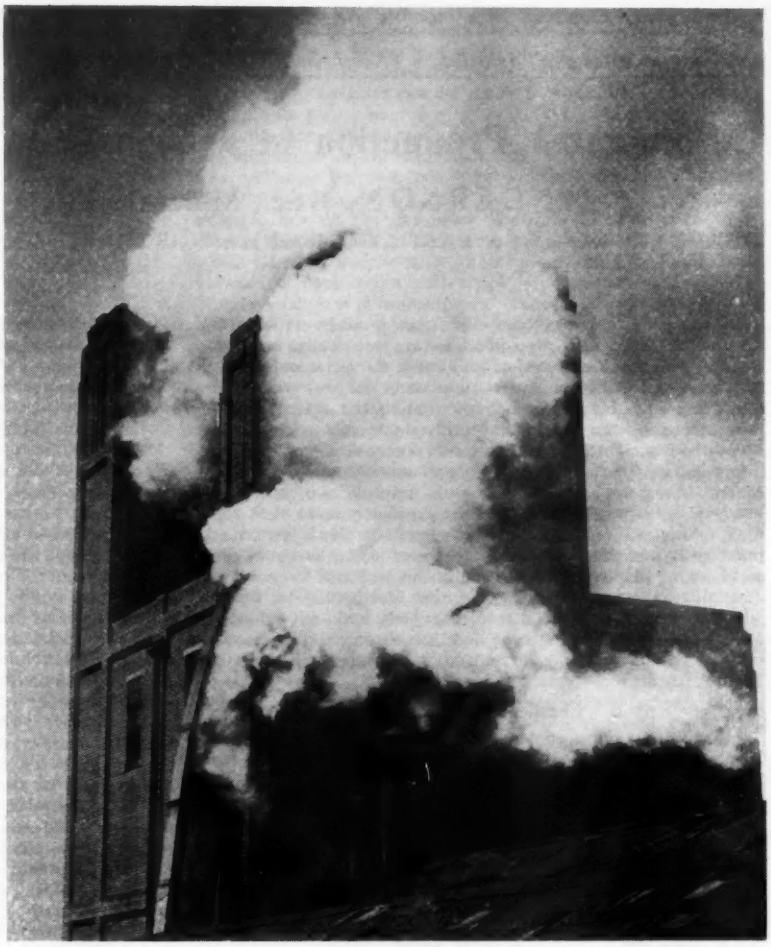
If the retorts were allowed to cool in the normal manner the scurf would be burned out entirely, thus destroying the evidence needed.

Gasholders Retained

Scurf, he said, was becoming a serious problem, shortening the life of retorts and brickwork. 'We want to find out how and why this happens, and what can be done about it,' he added.

Dr. Davis said retort-quenching experiments had been carried out four or five times previously in other parts of the country, twice to obtain the kind of evidence now being sought.

Only part of the site will be retained by the Board, for its gasholders.



The scene as water is pumped into the retort house at Newport gasworks

Day by the Sea for North of England I.G.E. Section

NORTH of England Section, I.G.E., held its sixth annual meeting at Saltburn-by-the-Sea on May 3.

After luncheon at the Zetland Hotel, Mr. J. E. White (Senior Vice-Chairman) welcomed the guests, including Sir Henry Jones (President, I.G.E.), Mr. E. Crowther (Chairman, N.G.B.), Mr. and Mrs. W. S. Wells (Ministry of Power), and Members of the Northern Gas Board.

Sir Henry, replying, thanked the Section for its hospitality. He said that he was most impressed by the work of the Sections and thought that if it were not for them the stature and cohesion of the Institution would suffer.

Mr. F. J. Webster (Junior Vice-Chairman) proposing the toast of the Northern Gas Board, said that over the past few years many of the Board's successes had been cloaked by rising costs and other factors. Competition was as strong as ever, but in the work that lay ahead the Section was ready to play its part.

Mr. Crowther thanked the members for the toast. He said the industry was on the threshold of new departures, new methods and new materials and he thought that the time would come when atomic energy would play its part in the gas industry.

At the A.G.M. appologies for absence were read from Dr. W. T. K. Braunholtz (Secretary, I.G.E.), Mr. A. G. Higgins (Assistant Secretary, I.G.E.), Lord Adams of Ennerdale (Member, N.G.B.).

Mr. J. R. Cleator, outgoing Chairman of the Section, presented his address (see Editorial Comment).

Mr. Cleator then inducted Mr. J. E. White into the chair. Mr. White thanked Mr. Cleator and presented him with a certificate. Other officers elected were Mr. F. J. Webster (Senior Vice-Chairman), Mr. A. Field (Junior Vice-Chairman), Mr. J. R. Matthew (Hon. Secretary), Mr. D. Yule (Hon. Treasurer).

Members' ladies enjoyed a coach tour of the Dales during the afternoon.

From a paper presented to a joint meeting of the North of England Section, I.G.E., and the Coke Oven Managers' Association (Northern Section), Durham, April 25

Co-ordinated Production in a Grid Area

By G. E. ANDERSON, B.Sc., M.Inst.Gas E.

GENERAL MANAGER EAST COAST GRID, NORTHERN GAS BOARD.

THE far reaching changes brought about by nationalisation of the coal and gas industries are too well known to require recapitulation, but a backward glance at conditions as they existed before the establishment of our respective Boards reveals the interesting fact that in the area which is now served by the East Coast grid, eight coke oven plants, owned and operated by eight different companies, were supplying crude gas to ten independent gas undertakings. As some of the latter were purchasing from multiple sources, while some of the former were similarly supplying more than one undertaking, 13 separate contracts were involved, governing the supply of about 40 mill. cu.ft. per day. Seven of the eight coking plants are now vested in the National Coal Board, and all ten gas undertakings in the Northern Gas Board, while the number of contracts has been reduced to eight, and the quantity of gas supplied has increased to 67 mill. cu.ft. per day, of which 36 mill. cu.ft. is now purified at the ovens.

Excellent Opportunity

In addition to the above ten undertakings, the Gas Board inherited a further 43 on vesting day, of which 23 were supplying consumers in what has now become the East Coast grid area. Though a limited number of agreements covering bulk supplies between neighbouring undertakings had been negotiated and were in operation, the majority of these company and municipal undertakings were producing gas independently at 35 separate works, and were supplying only within their respective statutory boundaries.

While this heterogenous cross section of large, medium and small gasworks, all operating at widely differing levels of cost and efficiency presented an excellent opportunity for integration and co-ordination, it will be obvious that the main transitional problems which faced the Gas Board at vesting day were concerned primarily with organisation of its administration and commercial activities throughout its full area of future responsibility. Though these aspects of specialist planning lie outside the scope of this paper, it is pleasing to record that the changeover to unified control was carried out very smoothly and effectively, largely due to the simultaneous partitioning of the area into ten self-governing divisions, all functioning as virtually independent large undertakings, in accordance with approved Board policies, and competent to plan and undertake internal integration schemes within their greatly enlarged boundaries.

It is significant that, from a production viewpoint, a considerable degree of progress in concentration of gas manufacture at the more efficient and economical works was achieved by the divisions before the establishment of the grid. Partly as a result of this gradual and systematic approach to the adoption of more comprehensive integration over a wider area, the principle of balance availability and demand in each and all of the divisions emerged as a basic feature in the design of the East Coast grid. Simultaneously with these divisional developments in concentration of production at selected works, the Board was examining its overall position in relation to future prospects, and formulating in consultation with the National Coal Board, its long-term plans to cope with the steadily increasing demands in all divisions. This essential provision involved close study of four interrelated considerations.

(a) Realistic forward estimates of maximum, average and minimum day demands in each division, and throughout the proposed grid area, for some years ahead;
(b) the effective absorption of additional coke oven gas supplies from new coking plants planned by the Coal Board;
(c) a co-ordinated survey of all extensions proposals planned by the major gas undertakings previous to vesting day, and
(d) the provision of an effective interlinked network to enable surplus availability in any division to be transferred elsewhere, particularly to those areas in which winter demands had tended in the past to exceed the available supply.

A very substantial contribution towards adequacy of supplies to meet the estimated annual increases in demand was provided by the Coal Board's proposals to erect new plants at Fishburn, Lambton, Monkton and Murton at specified dates, giving progressively increasing additional input to the Gas Board ranging from 7.5 mill. cu.ft. per day in 1954 to 25.5 mill. cu.ft. in 1958.

Advance notification of these clearly defined prospects enabled the Gas Board to embark on a constructive programme of plant extensions at a limited number of the more efficient and strategically situated manufacturing stations, which in conjunction with existing and future coking plants, would serve as bulk suppliers to the remaining works, where manufacture would cease. This involved re-consideration on a regional basis of various extension schemes actually in progress or already approved by individual gas undertakings previous to vesting, and it is interesting to record that progress to date on these amended plans has added new plant with a daily capacity of 18 mill. cu.ft. of coal gas and 24.5 mill. cu.ft. of water gas to the Board's internal production resources. Storage facilities have also been augmented by the erection of five gasholders with a combined capacity of 14.5 mill. cu.ft., and the overall result, after balancing the steady growth in demand year by year against the net gain in production capacity from both coke ovens and gasworks and allowing for the closing down of obsolete plant at 19 minor works, has shown an approximate equilibrium between peak load demand and availability each winter, with little or no margin in reserve.

Comparison of planning objectives at vesting day on the one hand and experience of actual developments to date on the other therefore confirms that many of the former have been realised, and that substantial economies have already been achieved by the gradual transfer of manufacture from small uneconomic units to large modern plants operating at higher load factors, at the expenditure of a minimum amount of new capital. It is consequently unfortunate that probable resultant reductions in price of gas to consumers have been more than neutralised by recurring and substantial increases in cost of coal, labour and other unavoidable charges to which both our industries are committed.

Agreed Scheme

Reverting to the planning stage, immediately following nationalisation, it should also be noted that the finalised proposals resulting from lengthy consultations between the two Boards, in accordance with the Gas Act, emerged as an agreed scheme, which was submitted to the Ministry in 1954, and, after full consideration, received official approval early in 1955. In addition to presenting a general survey of the main proposals and their respective advantages, both to the Boards themselves, and in the national interest, the scheme incorporated a planned production programme from 1953 onwards up to and including 1958, together with a mutually agreed contract negotiated for the proposed new Fishburn supply, and intended to serve as a model for future contracts.

One further development based on five years' experience of integration within the divisions was the decision by the Gas Board to establish an East Coast grid as a co-ordinating agency for the extension of collective working on a regional

scale, in order to permit of the fullest employment of the more modern plants, and the relegation to peak load and emergency use of the less efficient units, by means of interlinkage and bulk transfers between divisions. A general survey of the production resources in the grid area reveals the following position:

Division	Gas works In operation	Output capacity Ml. cu. ft. per day	Coke ovens	Output capacity
Blyth	1	3.0	–	—
Tyneside	6	51.7	3	27.5
Sunderland	2	9.2	2	11.0
Darlington	2	6.7	2	8.0
Tees-side	4	16.4	3	20.5
	15	87.0	10	67.0

(A diagram in the paper extends this survey by including the storage capacity and range of consumer demand in each division, together with the principal interlinking mains crossing divisional boundaries, and further adds a geographical aspect to the general picture of the grid area as a whole.)

At the outset, it is advisable to recognise the marked difference between fundamental objectives underlying the carbonisation activities of both industries, and taking the gas industry first, its specific functions, in this connection, might be summarised as follows:

(a) to produce the cheapest therm practicable from all plants required to operate collectively at any given time,
(b) to absorb full available supplies of coke oven gas as continuously as possible,
(c) to ensure adequate supplies at correct quality and pressure at all points in the area, and at all rates of demand,
(d) to adjust the necessary flexibilty in production rates to suit annual, weekly and daily load variations, with maximum overall economy in all cases, and
(e) to produce the optimum yield of coke and other residuals, specific quality standards, and as efficiently and economically as possible.

The Coal Board, on the other hand, directs its main efforts towards the production of the maximum yield of coke and other residuals of specified quality at minimum cost and towards maintaining gas outputs in accordance with contract specifications governing volume, quality and pressure, as negotiated and agreed with the Gas Board.

Outstanding Difference

From the practical viewpoint of operating carbonising plants year in and year out, the outstanding difference which emerges from the above distinction lies in the constantly variable consumer demand to which the Gas Board has to adjust its operations, in marked contrast to the steady full load working conditions associated with coking plant. The divergence in established operational techniques was fully considered by both Boards in their early consultations, not only in relation to the then scale of operations, but also to the substantially increased outputs which would become available as the projected new coking plants and gasworks production units went into commission. The conclusion then reached is best stated by quoting from the agreed scheme as follows:—'It seemed expedient to the two Boards, in the circumstances, that base load gas demand should be satisfied by coking plants, leaving the Gas Board plants with the task of meeting any remaining base load, and that portion of demand which varies seasonally.' Normal working routines were accordingly planned on this basis, and little or no difficulty has arisen hitherto in adhering to this policy. Longer term prospects, as then visualised, are quoted in this further extract:—'Consultation revealed to the Gas Board at a fairly early date that the allocation of base load to the coking plants would not reduce the production in Gas Board plants, even during periods of minimum demand below the level considered by the Gas Board to be practicable. Thus the Gas Board's most efficient plants will continue in operation at a reasonable load factor throughout the year, while seasonal peak loads will be met by the use of less efficient carbonising plant and by the production of water gas.' Whether these views will continue to be applicable to the same extent in future as they have been during the past five years will depend on the trends taken by consumer demand in relation to the maintenance or variation of annual load factors experienced hitherto. Evidence is tending to accumulate, particularly since the recent substantial increase in Monkton output, to indicate the advisability from an overall economic viewpoint of introducing a greater measure of flexibility in coke oven gas inputs, during minimum summer loads, where this is practicable, within reasonable limits.

Before any attempt can be made to co-ordinate production by multiple plants over any given period, it will be necessary to commence with a clear picture of the average maximum and minimum rates of consumer demand which will have to be met per hour, per day, per week and per month, and of the extent to which some of these variations can be balanced by effective use of the gasholder storage. Though coke oven managers are no doubt well able to visualise the wide divergence between hourly send-out at midday and midnight, and between a peak day's delivery in mid winter and a Bank Holiday delivery in midsummer, these variations do not normally affect their plant operational routines. Gas works managers, on the other hand, have to control plant outputs to avoid emptying or overfilling holders day or night, regardless of long or short term variations in rate of delivery. With a view towards assisting our joint discussion, and of indicating the somewhat complex pattern of variable consumer demand upon which effective co-ordination of production would depend, the following outline of flexibility requirements, classified into three categories may be of interest:—

(1) *Variation of delivery rate, hour by hour, on any given day.* The shape of the hourly delivery curve, is determined largely by the law of average, when applied to the hourly consumption of all consumers in a given area, and, as such, it reflects the established habits in the daily cycle of a typical community. Though extraneous factors, *e.g.*, temperature variations, intermittent usage by large industrial consumers, etc., affect the curve from time to time, it is relatively straightforward, from a study of past records, to forecast hourly demands throughout any 24 hour period within close limits, and to plan production rates accordingly, based on appropriate loss and recovery of holder storage reserves.

(2) *Variations in day to day deliveries, in any given week.*—The sequence of seven consecutive daily delivery curves, forming a weekly cycle similarly reflects the prevailing commitments of the average consumer from Sunday to Saturday inclusive in any given locality. Distinctive characteristics are usually discernible for each individual day, with marked reductions in total demand during the weekend, particularly in a busy industrial area, in spite of the heavy cooking load on Sundays, during which hourly consumption rates invariably reach their maximum levels in any week.

(3) *Seasonal varations in month by month deliveries in any given year.*—The gradual changes in prevailing weather conditions as spring, summer, autumn and winter follow each other in regular sequence are directly associated with corresponding variations in level of gas demand. The dominant factor which determines the extent of seasonal increase or decline in demand from summer to winter levels, and vice versa, is the space heating load, as it varies progressively but irregularly, from zero in hot weather to peak height during severe frost. It is perhaps significant to note at this stage that the summer level of average demand indicates the amount of base load plant which can be maintained in operation on a full load factor throughout the year.

Terms of Preference

In considering these three basic categories of cyclic variations in gas demand collectively, from the point of view of providing a composite yardstick for use in planning a co-ordinated production programme, it is suggested that, for the purpose of our discussion, the following simple terms of reference might be applied to the examination of our problem—(a) what are the main objectives underlying co-ordination, and (b) how can these aims best be achieved in relation to the actual production resources available in this area?

The overall purpose behind systematic co-ordination of production throughout a grid area is to take the fullest possible advantage of the removal of lines of demarcation between previously independent areas of supply, and to harness all production resources and storage facilities under unified control with a view towards achieving all the operational functions already listed in a previous section with maximum effectiveness, reliability and economuy.

In day-to-day practice this means the continuous operation of the most efficient and economic plants at the highest attain-

able load factors throughout the year; the controlled transfer of bulk supplies from selected sources to points of consumption at minimum cost; and the balancing of both long and short term flexibility requirements by the best use of storage capacity linked with planned production from appropriate units best suited to augment base load outputs as and when necessary.

In translating these theoretical aims into practicable politics it becomes necessary to dissect production capacity into its many separate components, and to apportion to each a specific duty in combined operations, suitable to its particular characteristics. On this basis, for instance, it would generally follow that all coke oven gas inputs would be classified as base load production, to be accepted at all times, in accordance with contract, and that modern gasworks plant as installed at Howdon, Stockton and elsewhere would also be operated, as fas as practicable, on full load factors. The remaining coal gas production units would be retained in service in accordance with their past and current operational records regarding cost and efficiency, while the older and more uneconomic plants would be delegated to emergency standby duty, or scrapped. The use of C.W.G. plants would be limited, in normal circumstances to the duty of bridging the gap between combined coke oven and coal gas availability and consumer demand on daily, weekly and seasonal cycles, and would similarly be classified and operated in accordance with their respective cost and efficiency characteristics.

Depending on the continuous or intermittent operation of some or all of the available components at the various manufacturing stations of the Gas Board, total production rates per hour throughout the area can obviously be varied at will within wide limits, and with consumer demand per hour fluctuating continuously in accordance with established patterns, the problem facing grid control is simply to balance one against the other, while simultaneously ensuring that pre-set standards of overall economy and security of supplies are fully maintained at all times.

Operational Aspects of Grid Working

First, the prospective demand in each division is estimated for each month in the financial year beginning April 1, as closely as possible taking into full account all the factors involved, *e.g.*—increases in number and types of consumers and appliances, trends in average consumption per consumer, known prospects or recessions in industrial and commercial demand, average temperatures, etc., and from these estimates both the total annual requirements and the average daily load during each month are readily ascertained, both for the divisions individually, and for the grid area as a whole. The original policy of sub-division into calendar months has recently been superseded by the adoption of standardised accountancy periods of four or five weeks' duration, but the principle of assessment remains the same.

The next stage is to fit base load production outputs into the programme, period by period, and division by division, allowance being made for all additional supplies from new sources and for all scheduled repair programmes. Since the divisions, as such, were well integrated internally and largely self-supporting before the establishment of grid control, the need for substantial inter-divisional bulk transfers has not arisen to an appreciable extent as yet, and the gaps between base load availability and average demand could in most cases be bridged—on paper—by production resources within the division. Considerable economies in overall production costs can be realised, however, particularly during the seasonal demand changes taking place in spring and autumn, by the concentration of sufficient production to bridge the regional gaps at a small number of selected plants, and by transferring the resultant local surplus by diversion of an equivalent volume of coke oven gas through the interlinking network, using the inherent pressure at source to reach its new destination. In this way the selected plant or plants are enabled to operate at substantially better load factors and consequently at reduced cost, as compared with a larger number of smaller and older plants sited locally. The grid production programme for the year is consequently drafted on this basis, using the most efficient and economically operated plants wherever scope is available for their rated capacities within the overall current demand throughout the area, provided the calculated bulk transfers between divisions can conveniently be handled by the various interlinks in the grid network.

It is important to note that both demand and production rates listed in the programme refer to average day levels, and that actual deliveries on any given day may vary very substantially from average, by reason of extreme cold weather conditions in winter, for instance, which may increase demand by over 20 mill. cu.ft. per day, or by public holiday breaks in summer, during which deliveries often fall to less than 50% of average for the period. Sufficient standby capacity must therefore be provided and kept in readiness during the winter for intermittent or prolonged use at short notice and under such peak load conditions all available production and storage capacities may be stretched to their fullest extent. Necessary reductions in base load outputs must also be planned in detail beforehand to suit public and industrial holiday periods during the summer.

Apart from setting the pattern for production policy throughout the year, the finalised grid production programme also serves as a basis for the preparation of complete financial estimates by all the divisions concerned, and for the ascertainment of coal and oil requirements, outputs of saleable coke and other residuals, etc. These in turn, provide the Chief Accountant's department with the necessary data, in conjunction with similar information from the Cumberland Division, for evaluating the balance sheet prospects of the Board as a whole for that year.

Further planning of actual operations throughout the year involves the regular preparation by the grid of more detailed programmes, week by week, conforming in general to the weekly cycle of current consumer demand. Forecasts of estimated day by day deliveries are listed for each Division, and for the grid area as a whole, together with proposed daily production rates, inter-divisional transfers, and stock levels at 6 a.m. each morning. As the week proceeds, the actual corrected delivery and production figures are recorded, and appropriate adjustments made for any major divergence from estimate. Each week's operations and results thus serves as a very useful standard for the better planning of its successor.

As a logical consequence of its planning and co-ordinating responsibilities the grid must obviously arrange facilities whereby it can keep a constant finger on the pulse of operations, in order to be in a position to take appropriate action immediately this becomes advisable or necessary, either because of persistent divergencies from estimate levels of delivery or production, or in the event of emergencies arising at short notice.

These facilities take the form of a control centre, operated on similar lines to those adopted by most other grid systems in this country and abroad, and staffed by qualified attendants working on shift rotas. Though an essential nucleus of key instrumentation will be incorporated in due course, none has, as yet, been installed, and the necessary data for functional control throughout the daily demand cycle is therefore transmitted by telephone, and consists, at present, of total production rates in each division, together with holder stock levels at the principal units, at regular two hourly intervals. In the case of the largest division where comparatively minor variations from estimate could assume significant proportions in a relatively short time, more detailed information is available at hourly intervals. A somewhat brief experience of less than two years of collective operation, on these lines throughout the grid area, augmented by a previous six-year experience of controlling production within the Tyneside Division, where the scale of output approximates to 50% of the overall grid total, has confirmed that an adequate measure of effective control can be exercised by proper interpretation of this comparatively simple data, and by prompt and correct action as and when required. The two important criteria are the rate of consumer demand and the stock level, at any given time, and both as compared with pre-set targets.

Temperature Changes

Little has been said so far concerning the direct effect of temperature changes on rate of consumer demand, but a great deal of investigation on this problem has been carried out by many workers in this country, and fairly reliable information is now available as to the average effect on consumption per degree rise or fall within normal ranges. In this grid area, for instance, it would be reasonable to anticipate an additional demand of about 1 mill. cu. ft. per day per degree Fahrenheit drop in temperature, or 10 mill. cut. ft. extra for a 10°F. drop, which often happens at short notice, and pro-

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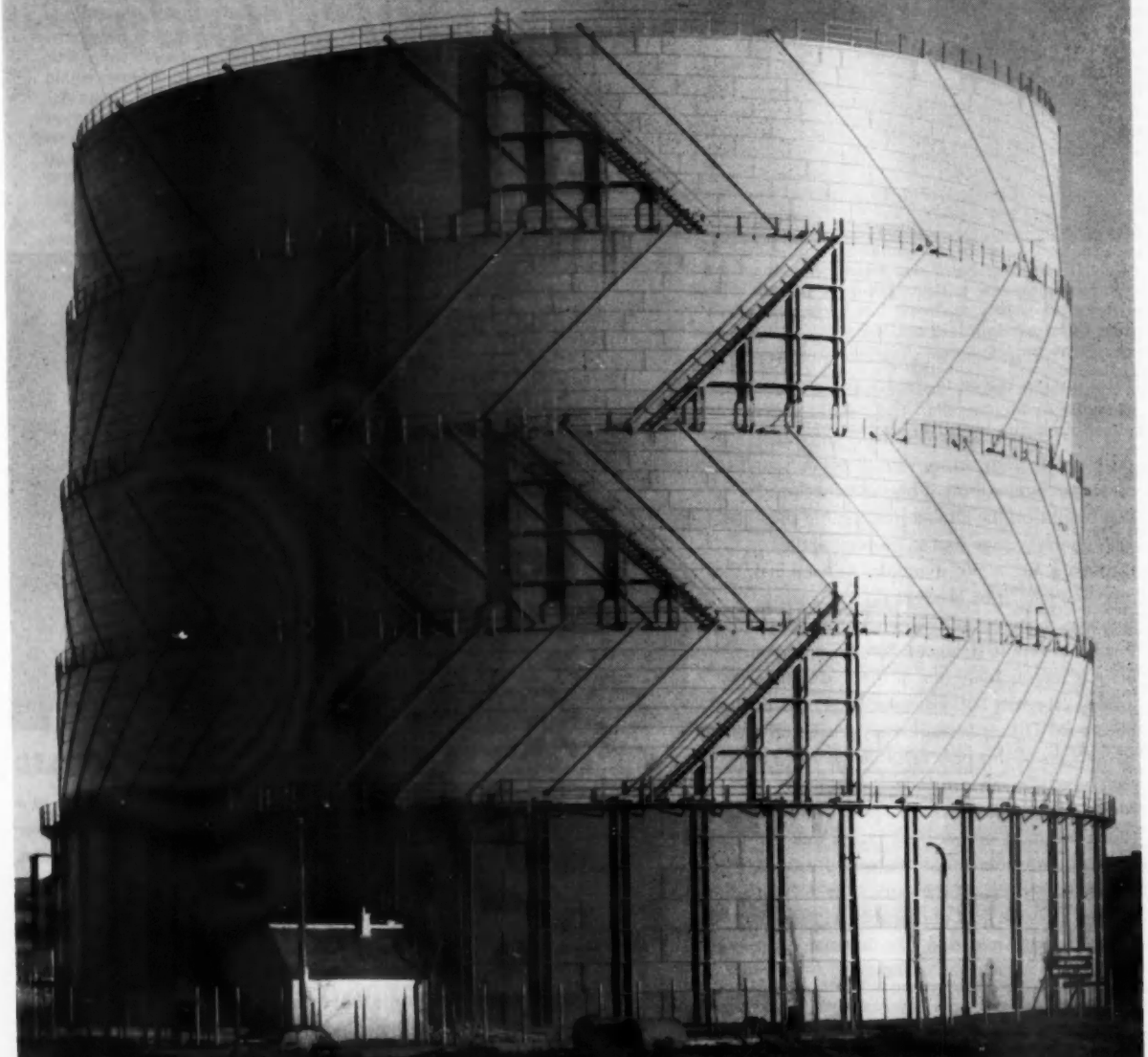

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vision must therefore always be made to enable production rates to be modified in accordance with weather forecasts received by arrangement from the Air Ministry. Fortunately there is almost invariably a certain time lag between change in temperature and resultant effect on space heating load which affords a measure of latitude in starting up or dropping plant at times.

The grid control techniques and routine are largely adequate, but regular contacts are made between the grid centre and the carbonisation department headquarters of the N.C.B. on matters relating to coke oven gas supplies; grid and divisional centres also keep in touch, through grid liaison officers in control of local production units. Information affecting all aspects of current production and prospective demand is thus available to all concerned, and necessary variations from normal procedure are fully discussed and agreed. For example, in the preparation of the grid production programme each week, advance proposals are submitted by each division listing their individual estimates of daily internal deliveries, available production capacity, and suggested grid intakes or exports. These provide an admirable basis for effective co-ordination by the grid to fulfil, as far as possible, the integration objectives already outlined, after which the finalised collective programme is circulated to all divisions each Saturday and covers the seven-day period commencing the following Monday at 6 a.m.

As the week proceeds current and accumulated output rates for production and delivery, and rise or fall in holder stock levels, are recorded at grid control centre at hourly intervals in the case of Tyneside, and at two-hourly intervals for the remaining divisions, and compared with target levels based on the estimated output figures shown in the programme for that particular day, adjusted when necessary for current or prospective changes in average temperature. The need or otherwise for minor or major adjustments in production rates or bulk transfers thus soon becomes self-evident, and appropriate action is taken through available contacts with any or all of the divisions. The system further provides early indication of breakdown or stoppage on any plant in the area, including all coke ovens, and facilities are again available for direct investigation of the extent and probable duration of the trouble, and for the replacement when necessary by equivalent transfers from other sources.

Other Responsibilities

Besides the programming and control functions exercised by the grid, certain other responsibilities have been undertaken, among the more important of which may be instanced the purchase, on behalf of the Board, of crude and purified coke oven gas from all sources, and its re-allocation back to divisions at agreed uniform prices. This policy was selected as a logical pre-requisite to the grid's over-riding powers to divert coke oven gas supplies anywhere within the network. Though much simpler than the financial arrangements adopted by other grid systems, which in some cases, involve the purchase and re-sale of all gas produced in the area, this restriction of financial responsibility to the purchase of coke oven gas only has proved perfectly adequate since its introduction in January, 1956. It has the advantage of absorbing a minimum of accountancy staff time, while ensuring that this important aspect of the Board's financial transactions is carefully scrutinised in relation to its day-to-day commitments.

The system adopted at control centre involves the keeping of accurate records of corrected daily intakes of all coke oven gas from all sources, together with full particulars of all changes in coal prices, freight charges, etc., to enable accounts to be checked on receipt, in accordance with governing contracts, and certified for payment. Together with associated supplementary charges, including cost of oxide delivered to all coke ovens equipped with purifiers, operating and capital charges for purification, and agreed charges for excess pressures above 15 lb. per sq. in., which are also payable by the grid, the amount involved per annum approaches £3 mill. Forward estimates of these transactions, prepared in conjunction with the grid production programme enable average uniform prices to be determined each year for crude and purified supplies respectively, on which the charges for re-allocation back to divisions are based. While invoices for coke oven gas supplies are submitted and paid each calendar month, and divisional allocations are charged out on four and five weekly accountancy periods, an accurate record of the income and expenditure position is nevertheless maintained at all times, and no difficulty is anticipated in breaking exactly even at the end of the financial year.

Forward Planning

All matters of grid administration concerned with policy and finance are dealt with by a grid management committee, which includes the divisional general managers of all five divisions concerned. One further responsibility the grid undertakes through this Committee is to assist the Board in its development plans. Detailed surveys of long term prospects affecting consumer demands, as compared with available production resources and interlinking facilities, are made from time to time together with appropriate recommendations when these appear advisable to ensure a workable balance. Extensions to either production capacity or network system, when found to be necessary, require to be commenced some years ahead, particularly in the case of major projects, in order to be available to go into operation when needed, and plans submitted and approved last year for grid main extensions, estimated to cost £400,000, will serve as an example of preparatory work undertaken in order to provide the necessity latitude, in this instance, to handle the output of Murton, due to go into operation in 1958, to the best overall advantage. Proposals have also been considered and in some cases approved for the construction of additional carbonising and peak load plants at selected works up to and including 1962.

The gross intake of coke oven gas each year since 1952 indicates the steady increase in the base load component of production availability consequent mainly upon the additional outputs from new coking plants commissioned in accordance with the Coal Board's development programme. As most of this additional production has to be absorbed at a uniform rate throughout the year, a point is likely to be reached sooner or later at which the margins in relation to the summer level of consumer demand largely disappear. This possibility had been envisaged from the outset by a tentative provision relieving the Gas Board of the obligation to take any gas from Murton during the summer.

While all original contracts governing coke oven gas supplies purchased in this area for many years past specified crude gas and consequently involved purification at the receiving gasworks, this policy has now been completely reversed, and all new supplies, together with a number of existing and extended outputs from older plants have been contracted for on a purified basis. The substantial increase in purified coke oven gas input to the grid consequent on the successive introduction of purification at Fisburn, Stella Gill, Lambton, Brancepeth and New Monkton has raised the proportion of purified gas compared with total quantity supplied by the Coal Board from zero to over 60% within the last three years.

While this development is associated with many advantages from a grid operational viewpoint, and has been adopted in the agreed scheme on the grounds that 'it will be both convenient and desirable to be able to supply gas direct from the grid system,' it may perhaps be mentioned that expert opinion, both in this country and abroad, remains divided on the policy supplying consumers by direct tapping from grid mains. Apart from opening up this possibility of supplying direct to new or existing demand areas en route, the policy of purifying coke oven gas at source greatly improves control facilities for load balancing throughout an integrated area, by making it much more convenient to divert bulk supplies, previously confined to one, or occasionally two, receiving works, in any required direction. Thus for instance, the proportions of Lambton and Stella Gill supplies allocated respectively to the Sunderland and Tyneside Divisions can be varied within wide limits, whilst Fishburn gas can similarly be directed either to Stockton or to Darlington, under its own pressure and at short notice.

The alternative of continuing to purify at gasworks on a parochial basis, and of subsequently recompressing to transfer equivalent bulk supplies to another division or unit, would obviously prove more expensive and inconvenient. The fact that the necessary sites for erection of large installations or purifiers on gasworks were not available, in some cases, *e.g.* —Fishburn, Lambton and New Monkton was therefore an advantage rather than otherwise, though the relegation of many purifier sections, on certain works, to a state of redundancy strikes a less satisfactory note. This apparent disadvantage will, in most cases, prove short-lived, as these plants will be absorbed

in the various schemes of carbonising and peak load plant extensions now under consideration by the Board, while some sections have already been transferred and put into commission at other works where purification capacity had previously been overtaken by steadily expanding loads.

The obligation to comply with Ministry regulations concerning calorific value and purity from H_2S has been a Gas Board responsibility of major importance for many years, during which official tests have been made at all manufacturing or purifying stations either by continuous recorder in the case of the larger works or by non-recorder tests in the smaller units. One of the inevitable consequences of transferring purification to coke ovens and thus making it possible to supply consumers direct therefrom has been the necessity to extend official testing to these plants, and a significant feature arising from this development lies in the fact that although day-to-day operational routine and control has of necessity passed to the Coal Board, all official responsibilities involved under the Gas Act still remain with the Gas Board, including penalties imposed for infringement or default.

Future Operational Prospects

To illustrate the type of problem raised by the steadily increasing input of coke oven gas as a base load component throughout the year, the following is a summarised comparison of three successive annual outputs, each with their proportional composition:

	Calendar Year 1955		Calendar Year 1956		Financial Year 1957/58	
	Ml. cu. ft.	%	Ml. cu. ft.	%	Ml. cu. ft.	%
C.O.G.	19,240.5	53.8	21,588.6	59.2	23,395.1	62.7
Coal Gas	12,247.2	34.3	11,007.5	30.2	10,903.1	29.2
Water Gas	3,743.8	10.5	3,253.7	8.8	2,156.3	5.8
Other Gas	489.3	1.4	656.9	1.8	862.1	2.3
	35,720.8	100.0	36,506.7	100.0	37,316.6	100.0

It can be shown from the finalised grid programme for 1957-58 that the normal scope for use of water gas production as the best way of meeting flexibility requirements throughout weekly demand cycles has been cut so substantially that it is unlikely to be usable for a continuous period estimated at 22 weeks this summer, consequent on the recent increase in Monkton output to over 10 mill. cu. ft. per day. Over 6 mill. cu. ft. per day of readily variable production has thus been replaced by a virtually inflexible base load input throughout future summer periods, when normal flexibility requirements often enforce substantial curtailment, particularly at week ends.

The rapidity of this trend is further emphasised when it is noted that variation of production output to required levels by means of co-ordinated water gas production was practicable, except for eight weeks last summer, and continuous throughout the previous year apart from the mid-summer two weeks industrial holiday period.

Even without the extra gas available from the additional ovens at Monkton, which commenced operation in November, 1956, the level of coke oven gas production was more than adequate to supply the combined consumer demand in winter of the Tees-side, Darlington and Sunderland divisions, and it is also reasonably certain that with Monkton included it could exceed the total grid area demand in summer this year. The enforced employment of alternative policies to water gas production for varying production rates to suit weekday and weekend requirements will obviously react unfavourably on the fundamental aspect of cost per therm produced particularly if the rated outputs of base load carbonising plants at gasworks have to be reduced continuously or varied intermittently.

Though cost considerations constitute the main yardstick whereby the grid function of co-ordinating all production throughout the area is approached and determined, it has been thought preferable in the present instance to focus attention solely on the technical aspects of joint collaboration, and to omit any reference to comparative production costs between different types of plant available, including coke ovens. Where problems are likely to arise, however, involving the lowering of load factors, the possibility must be recognised that the marginal cost of gas 'not made' on a modern base load carbonising plant on a gasworks may be considerably lower than the average price of purchased coke oven gas, and any substantial or prolonged curtailment of output by adoption of this policy would consequently prevent a minimum cost of production being realised.

Other possible solutions which are being examined from both a technical and economic angle are:—

(a) The use of coal gas for heating settings instead of coke fed producers at selected works;
(b) scheduling of major rebuilding programmes, where necessary, at gasworks and coke ovens, year by year, to give a better workable margin between summer demand and base load availability;
(c) diversion of coke oven gas to plant and colliery boilers where practicable; and
(d) prospects of increasing consumer demand throughout summer by special tariffs and interruptible contracts for industrial usage.

It appears likely that a combination of two or more of these expedients will be needed for flexibility in net production levels per day to be available so that a measure of control is exercised without excessive disturbance of base load operating conditions on plants of the Howdon and Stockton type, or complete stoppage of smaller but reasonably economic plants elsewhere.

The diversion of coke oven gas to boiler plants at the ovens has often been requested in the past, particularly during public holiday periods, and the Coal Board has invariably agreed, often at short notice, to transfer one or more boilers to gaseous firing at those plants where a changeover from normal solid fuel firing is practicable. Though the scale of reduction, often from multiple sources, has been quite appreciable, the maximum collective volume transferable to boilers has now been more than offset by the recent increase in Monkton output, leaving the present net volume higher than the previous gross input. The extent to which this policy will be able to ease future problems of summer surplus has been correspondingly reduced.

Working strictly according to contracts, supplies can only be curtailed by either side to 90%, apart from specified and short term holiday periods, without raising a question of penalty. When this extent of permissible reduction is compared with the variations between winter demand, now approaching 1,000 mill. cu.ft. per week and average summer demand of less than 500 mill. cu.ft. per week, the flexibility problem will be seen to present considerable difficulty to the Gas Board, particularly when the further variations imposed by the weekly demand cycles have also to be accommodated within the minimum weekly output level.

One indirect method whereby future problems associated with the seasonal load curve might be eased very substantially lies in the adoption of lean gas firing during winter at one or more selected coking plants—a practice which has not, so far, been introduced in this area, though its use has been standardised elsewhere in this country and on the Continent. Its contribution would be to provide the additional outputs in winter which the new base load carbonising plants now under consideration would be designed to supply, and their construction could thus be postponed to a later date, determined by rate of growth in consumer demand, and the further aggravation of summer load problems would be avoided in the meantime. The main obstacles to overcome are the various factors which combine to make the cost of extra gas released during winter, by producer gas firing, using graded oven coke so high that no case can be advanced by the Gas Board for its acceptance.

Would Provide Extra Coke

Alternative methods of providing lean gas, using cheaper types of fuel, are being investigated with promising results, particularly on the Continent and it is hoped that some of these newer techniques will be economically applicable in this country. The substantial increase in coke oven gas availabilities throughout the winter load, coupled with its convenient flexibility, would replace an equivalent production of water gas and thereby assist in providing the extra coke requirements anticipated in connection with the Clean Air Bill. In this area alone, lean gas firing, if applied to Monkton, Lambton, Fishburn, and Murton could yield over 24 mill. cu.ft. per day of released rich gas, and the production of an equivalent quantity of water gas now absorbs about 300 tons of coke and 45,000 gal. of oil. At a conservative estimate of 50% load factor over three months, the overall increase in coke available for sale would therefore exceed 13,000 tons.

With regard to the transfer of purification to coke ovens, it has already been indicated that this development has enabled

inter-divisional transfers to be effected more economically and conveniently, and no major disadvantages in other directions are anticipated as likely to create future problems. But a share of the operational headaches associated with the obligation to guarantee absolute freedom from H_2S at all times has now been transferred to the Coal Board, together with the simultaneous requirements of converting the stock of oxide in circulation into saleable parcels at regular intervals. In this instance, joint collaboration would appear to apportion to the Gas Board the rôle of advisory consultant, which it is readily willing to undertake, particularly as the sequel to any persistent purification difficulties encountered at coke ovens would usually take the form of curtailment of throughputs, possible at periods of peak demand.

Considerable experience has already been gained at the various plants delivering purified gas, though teething troubles have occasionally intruded, involving special investigations into temperature and humidity control, frequency of rotation, oxygen contents, direction of flow, methods of emptying and refilling, and other essentials which individually or collectively influence purification efficiencies. Gas Board staff have assisted in these investigations, in which the trouble has usually been located and remedied fairly promptly, and from experience, it is thought that operating conditions on coke oven plants, with throughputs maintained at full load throughout the year, tend to be somewhat more onerous than in normal gasworks practice, where seasonal reductions in gas demand regularly provide a comfortable margin of purifier capacity in summer, enabling part-spent parcels to be worked up to saleable strength, and adequate preparations to be made in readiness for each successive winter load.

The implications arising in practice on the introduction of official testing at coke ovens are more complex than those associated merely with the changeover in purification. Whereas previous to both these developments it had been standard practice to dilute the incoming crude gas usually maintained at 500 B.Th.U. per cu.ft., or over, to declared value by orthodox means using lightly carburetted or blue water gas, or alternatively, producer gas, depending on the facilities available at the particular gasworks concerned, the provision of adequate and reliable dilution facilities at coke ovens has now become necessary to reduce the normally higher quality of stripped coke oven gas to the declared standard of 475 B.Th.U. per cu.ft., and to maintain it within close limits of this figure.

Another important problem which is progressively placing further responsibilities upon technical staffs at coke ovens is the necessity to control the gum forming tendencies of the gas before dispatch. This may not be easy in practice, particularly when producer plants have to be extended to maximum capacity to provide sufficient volume for dilution requirements, but the effects of gum presence on the district are so disturbing that troubles of this nature, must wherever possible, be located and remedied at source. Notification of the incidence of districts complaints is immediately forward to Coal Board headquarters, in all cases where coke oven gas may be responsible, and here again, the technical services of the Gas Board are freely available for assistance.

Technical and Commercial Courses

THE report of a Ministry of Education working party which has been looking into the procedure followed in the approval of technical and commercial courses recommends that approval of courses be decentralised from the Ministry to regional staff inspectors, to accelerate the process of approval, and that a time table be observed by local education authorities, regional staff inspectors, and regional advisory councils. Proposals for each session should be submitted by the preceding January and should be settled by mid-March to speed up procedure and, by ensuring that all proposed new courses are considered simultaneously, help regional advisory councils and regional staff inspectors to see each course more clearly against the up-to-date regional background.

The effect of these proposals is expected to be a substantial stream-lining of procedure, the giving of decisions within a short time, and the concentration of teaching resources on substantial classes instead of their dissipation over a number of poorly attended courses. The new arrangements should also help to improve the co-ordination of courses on a regional basis among the local education authorities concerned.

Gas in France

OUT OF DATE VOCABULARY

The following is a translation of an editorial which appeared in the March issue of the Journal des Usines à Gaz:

So much has been said about the evolution of the gas industry that it would seem useless to say more. But in so many circles outside the industry this evolution is still not sufficiently known and only begins to acquire a certain notoriety from the fact of the recent development of the natural gas of Lacq.

In gas engineering circles this evolution has been so rapid that vocabulary has not kept up with it; words are behind the facts, to begin with our own title, 'The Journal of the Gasworks.'

We claim to be one of the oldest French technical papers, having been born in 1878. At that time the gas industry was, generally, in a form which might be described as '*artisanale*,' where each town had its own gas-producing plant, serving itself and sometimes its suburbs. The description appeared to become somewhat obsolete when production was centralised in large concentrations, when the first so-called 'gas coke ovens' were established while many works were shut down, their districts being supplied with gas transmitted sometimes over great distances. However, respectful of the past, one maintains a familiar décor which may sometimes come back to relevance.

That is so true that today the expression 'gas coke oven' seems in its turn out-of-date; the great works like those at Gennevilliers or Alfortville or even Rouen are not, properly speaking, coke-making plant, that is to say, plant designed to produce coke (meaning metallurgical coke); they include, indeed, batteries of coke ovens, but these constitute only a minor element with all the installations for the production of water gas, peak load gas, propane reserves, stocking of coal, coke and gas and emission plant which in general have no equivalent in pure coke oven plants whether allied to collieries or steel-making plant.

Our great central plants, then, are veritable gasworks, while coke-ovens making primarily metallurgical coke are designed for the production of steel.

One should also notice at this point the idea of complete gasification which is beginning to be realised in some large independent installations.

Should we not therefore re-examine our terminology, even in the most general expressions? Under the term 'carbonising industry' are included two types of plant, that making coke for the blast furnace, producing gas at the same time, and that type the business of which is to make gas but which also makes coke, only rarely used, however, in the blast furnace. Even in the matter of coke a more precise terminology would permit one to indicate whether one speaks of coke for the blast furnace or of other cokes going to domestic or industrial uses, different by their properties and destinations.

It is not only in the matter of production that terms have often lost their sense. When an old gasworks is shut down and its district is fed from bulk supply it has been usual to continue to consider the district of distribution as an independent undertaking; but where does the unit of undertaking begin and end? In other words, the cities of Paris or of Lyons constitute single undertakings by the same right as the gasholder station of a little town.

Finally, there are problems in defining what we have begun to call, for practical purposes, 'families of gases.' An attempt at classification has been made with regard to appliances for utilisation and the inter-changeability of gases. This does not so much concern the totality of possible gases, ranging from the poor gases (blast furnace gas, gases produced by underground gasification) to the rich gases. It is this totality which constitutes the energy potential of gases with the possible substitution of one for another.

And perhaps, one day, it will be necessary to contemplate an extension, if not replacement, of the expression 'town gas' now wrongly employed in a too restrictive sense.

Such are the questions which show that the evolution of the gas industry has been more rapid than that of our language.

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THE UNIVERSITY OF LEEDS

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The Scholarships are intended to enable a student to take a course of study at the University in preparation for a responsible position as a gas engineer.

Further particulars and forms of application may be obtained from the Registrar, The University, Leeds 2, to whom application should be made before June 30, 1957.

THE UNIVERSITY OF MANCHESTER

GAS PLANT MANUFACTURERS' DEVELOPMENT COUNCIL SCHOLARSHIP

APPLICATIONS are invited for the above Scholarship, tenable for 3 years from October, 1957. The Value of the Scholarship is £350 per annum (less fees), and is not subject to deduction on account of parental income. Candidates must be of British nationality and will be required to read for the Degree of B.Sc. or B.Sc. Tech. with Honours in Chemical or Civil or Mechanical Engineering. Other things being equal, preference will be given to candidates already employed in the Gas Plant Industry. Candidates must be nominated by their Headmasters (and, if they are in employment, by their employers also), and selected candidates will be required to attend at the University for interview. The Scholarship Regulations and Forms of Nomination may be obtained from the Registrar, the University, Manchester 13, to whom the forms should be returned not later than July 1, 1957.

APPOINTMENTS VACANT

SOUTHERN GAS BOARD

REGIONAL INDUSTRIAL ENGINEER

APPLICATIONS are invited from suitably qualified persons for the above appointment at Southampton.

The starting salary for the post will be between Grades "A" and "C" (£1,025 to £1,425) of the National Salary Scales for Senior Gas Officers.

Applicants should have experience in the design, construction and installation of industrial and commercial equipment, and should have passed the Associate Membership examination of the Institution of Gas Engineers, or possess an equivalent qualification.

The successful candidate will be required to pass a medical examination and, unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required to join the Board's Staff Pension Scheme.

All applications must be made on a form, which may be obtained from the Personnel Manager, Southern Gas Board, 164, Above Bar, Southampton, and completed forms should be returned to him by May 29, 1957.

SCOTTISH GAS BOARD

NORTHERN DIVISION

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT with duties at Inverness and undertakings in the north of Scotland.

Applicants should be technically qualified and experienced in Gas Works control and in the operation of vertical and horizontal retorts and of Carburetted Water Gas Plants.

The salary applicable to the post will be within Grades A.P.T. 6/7 of the National Salary Scales for Gas Staffs Provincial "A" (£610-£750 per annum).

The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications stating age, and giving particulars of education, training, experience and qualifications, together with the names of two referees, should be addressed to the undersigned to arrive within fourteen days of the appearance of this advertisement.

H. S. MILNE,
General Manager.

50, Cotton Street,
Aberdeen.
April 18, 1957.

SCOTTISH GAS BOARD

NORTHERN DIVISION
DINGWALL DISTRICT

APPLICATIONS are invited from suitably experienced and qualified persons for the position of DISTRICT MANAGER at Dingwall.

The salary applicable to the post is in accordance with the Board's scale of salaries A.P.T. 6 Provincial 'B' (£625-£705 per annum).

The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications stating age, and giving particulars of education, training, experience and qualifications should be addressed to the undersigned to arrive not later than Monday, May 20, 1957.

H. S. MILNE,
General Manager.

50, Cotton Street,
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April 29, 1957.

NORTH WESTERN GAS BOARD

HEAD OFFICE—TECHNICAL AND PLANNING DIVISION
PRODUCTION ENGINEERING ASSISTANT

APPLICATIONS are invited for the above pensionaable position, at a salary within Group B—(£1,105-£1,265 p.a.) and the commencing salary will depend upon the qualifications and experience of the successful candidate. The duties of the appointment are varied and will be concerned with all aspects of gas production.

Applicants should possess wide experience in the gas or allied industries, and possess a Chemical Engineering qualification or a qualification in the Gas Engineering and Chemistry or Chemical Technology.

Applications stating education, qualifications and experience, together with the names of two referees, should reach the Secretary, N.W.G.B., 60, Whitworth Street, Manchester, 1, within 14 days.

SOUTH WESTERN GAS BOARD

SWINDON DIVISION
INDUSTRIAL GAS ENGINEER

A SUITABLY QUALIFIED person is required to develop industrial gas sales and to organise the installation and maintenance of all types of industrial appliances.

Applicants should have had wide experience of this work and preferably be Members of the Institution of Gas Engineers.

The salary will be within the Grades A.P.T. 10-12 (£860-£1,070).

The successful candidate will be required to pass a medical examination and subject to any pension rights he may now possess to join the Board's Staff Pension Scheme if eligible.

Applications stating age, experience and qualifications, together with the names of two referees to be forwarded to the undersigned not later than Wednesday, May 22, 1957.

W. B. CLARIDGE,
Divisional Engineer and Manager.

43, Regent Street,
Swindon.

WALES GAS BOARD

ASSISTANT INTERNAL AUDITOR—WEST WALES

APPLICATIONS are invited for the above position, the salary for which will be in accordance with Grade D, £650/£730 per annum, of the scales agreed by the National Joint Council for Gas Staffs. The post is pensionable.

The West Wales Internal Auditor covers the Swansea, Mid Glamorganshire, Carmarthenshire and Pembrokeshire Groups. The person appointed will be required to work under his supervision, and to reside in the Swansea district, at which undertaking the Internal Auditor is based. The duties involved will necessitate a great deal of travelling and absence from base when visiting the more distant undertakings in the Groups mentioned.

Candidates should hold, or be studying for, a recognised accountancy qualification and have some experience of internal audit and/or accountancy work preferably in the gas industry.

The successful applicant will be required to pass a medical examination.

Applications giving full details of qualifications and experience, together with the names of two referees, should be sent to the Chief Accountant, 2, Windsor Place, Cardiff, not later than May 20, 1957.

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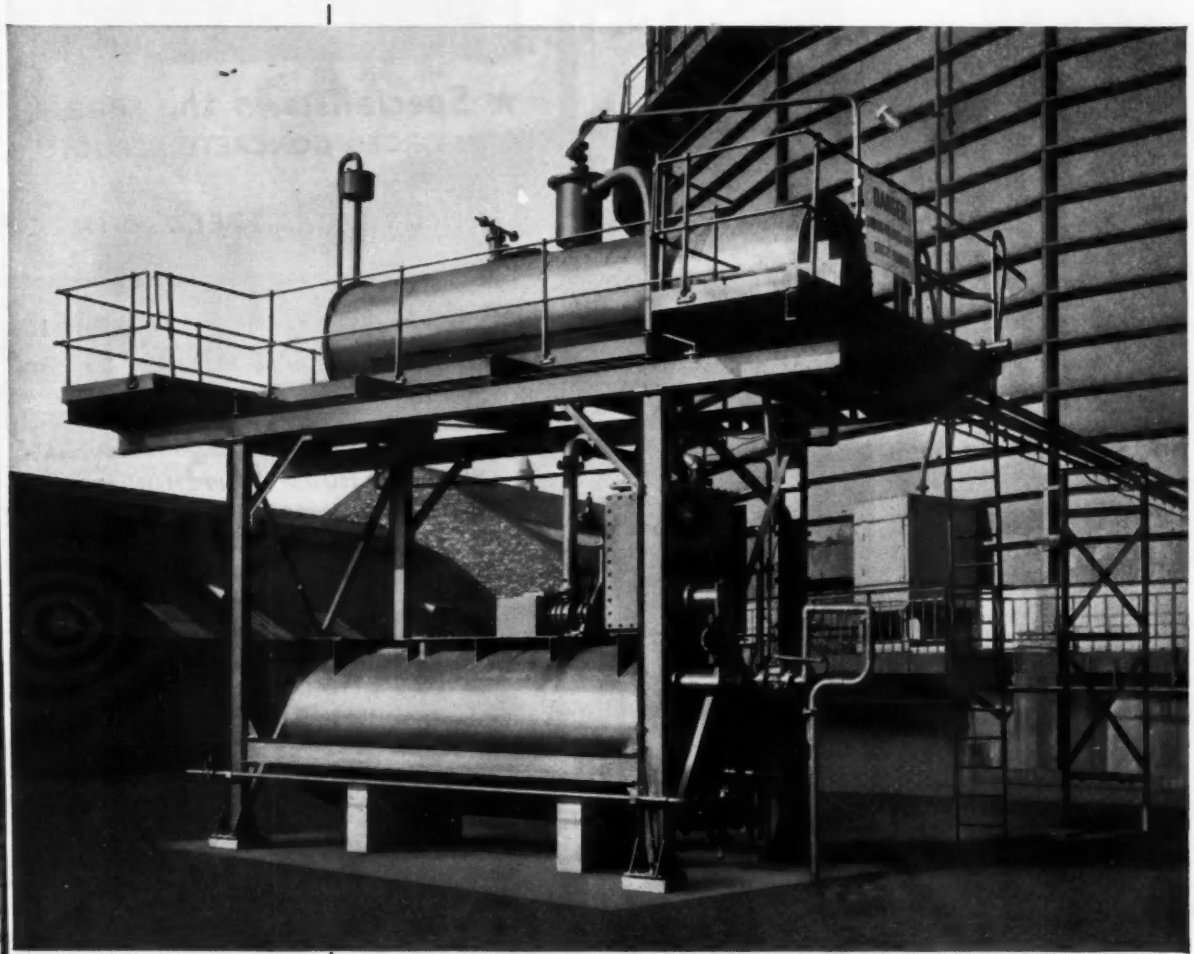

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The illustration shows the plant installed at the Bradford Road Works, Manchester, for dehydrating the sealing tar for the waterless holder.

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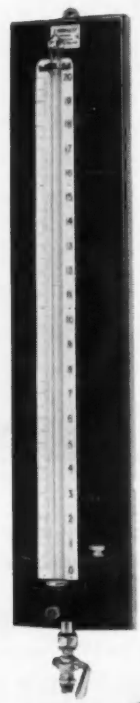

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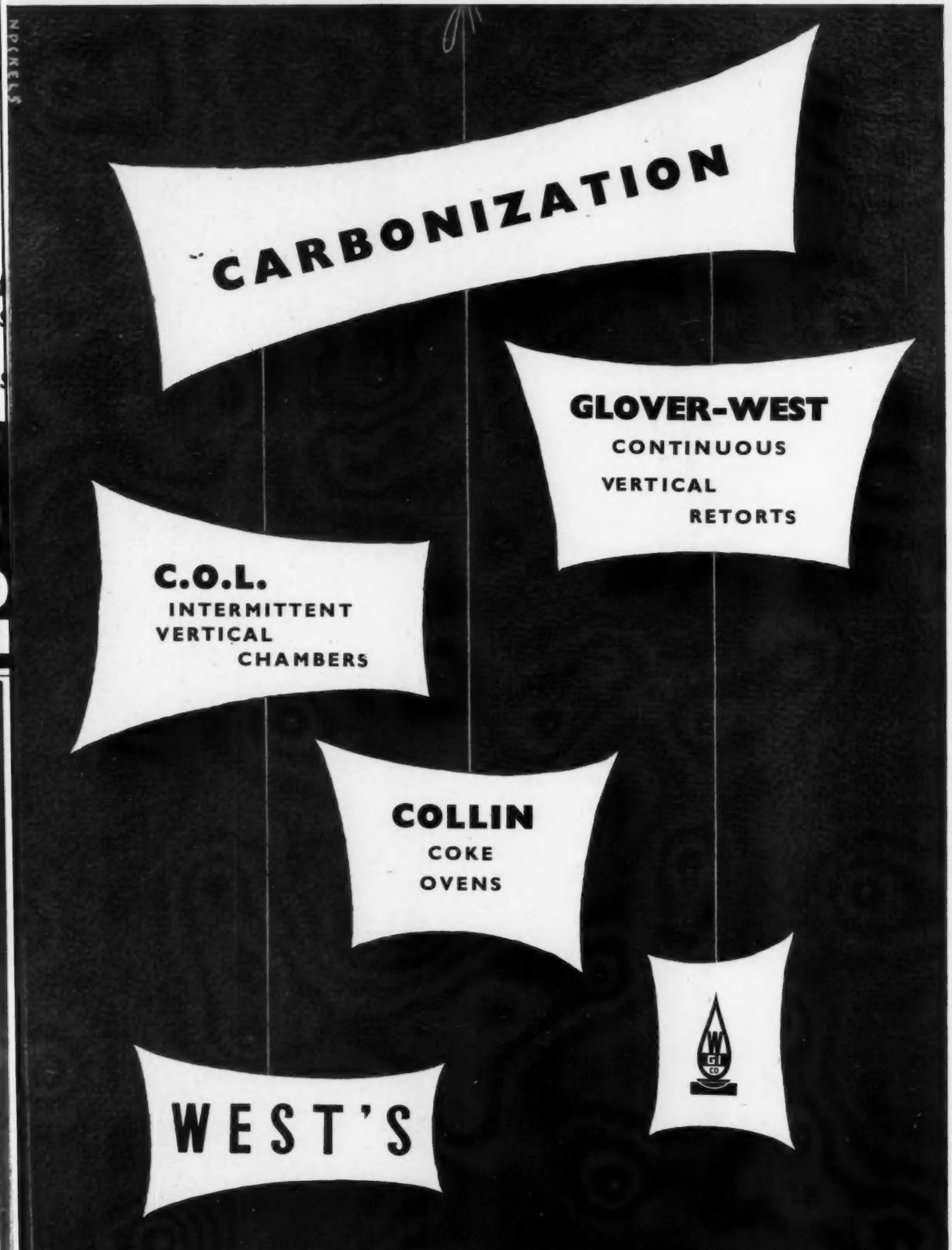

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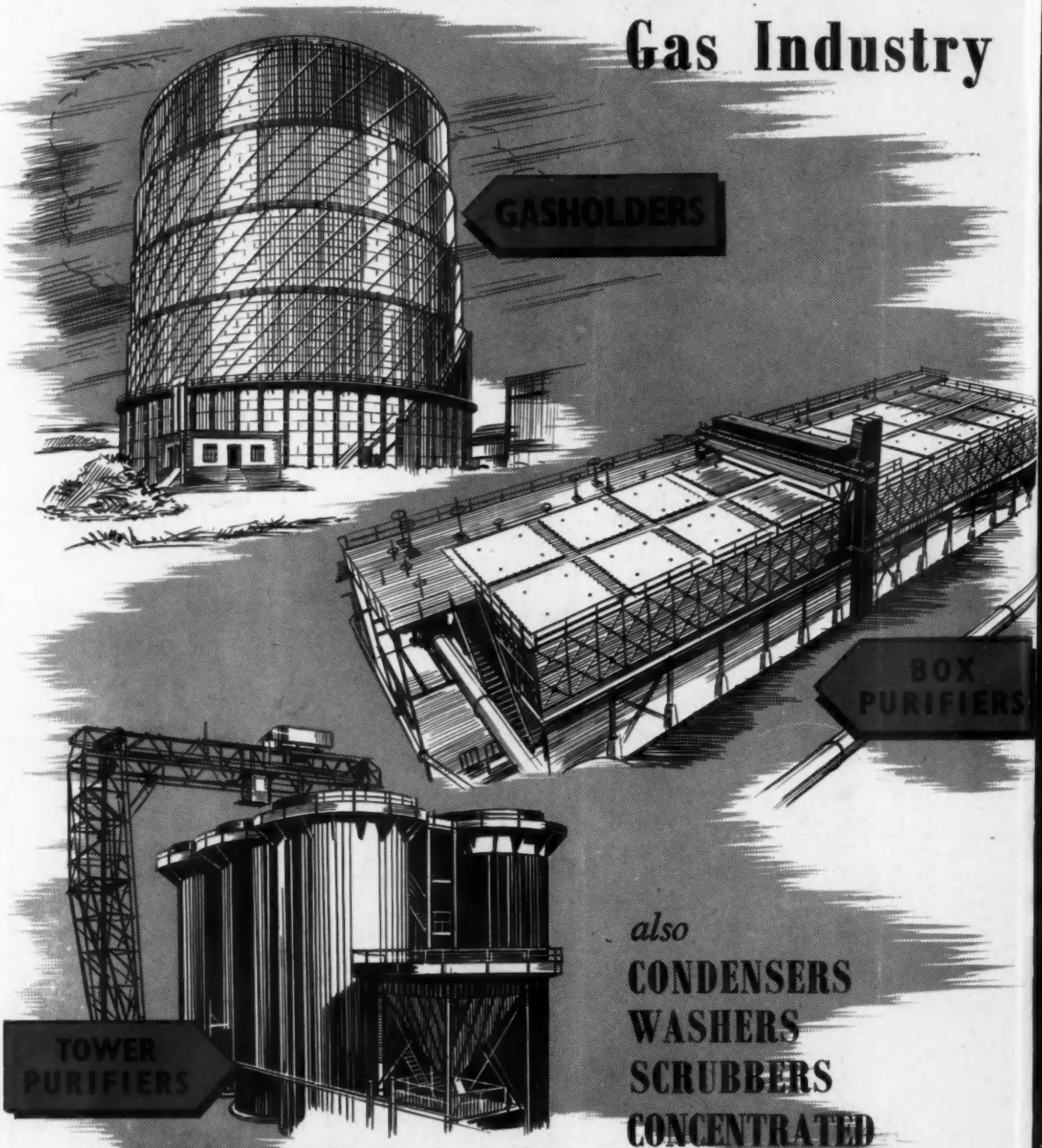

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